

STATE OF CALIFORNIA  
DEPARTMENT OF NATURAL RESOURCES  
GEORGE D. NORDENHOLT, Director

DIVISION OF MINES  
FERRY BUILDING, SAN FRANCISCO

WALTER W. BRADLEY

State Mineralogist

San Francisco]

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# CALIFORNIA MINERAL PRODUCTION

AND

DIRECTORY OF MINERAL PRODUCERS

FOR 1934

By  
HENRY H. SYMONS

COMPLIMENTS OF  
Walter W. Bradley,  
STATE MINERALOGIST.



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**Ferry Building, San Francisco, in which  
are the offices, library, laboratory, and  
mineral exhibit of the Division of Mines.**



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## LETTER OF TRANSMITTAL

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August, 1935.

*To His Excellency, THE HONORABLE FRANK F. MERRIAM,  
Governor of the State of California.*

SIR: I have the honor to herewith transmit Bulletin No. 111 of the Division of Mines, of the Department of Natural Resources, being the annual report of the statistics of the mineral production of California.

The remarkable variety, total valuation, and wide distribution of many of our minerals revealed herein show California's importance as a producer of commercial minerals among the states of the Union.

Respectfully submitted.

GEORGE D. NORDENHOLT,  
Director, Department of Natural Resources.

## INTRODUCTION

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It is the endeavor of the staff of the State Division of Mines (formerly State Mining Bureau), in these annual reports of the mineral industries of California, to so compile the statistics of production that they will be of actual use to producers and to those interested in the utilization of the mineral products of our State, while at the same time keeping the individual's data confidential. In addition to the mere figures of output, we have included descriptions of the uses and characteristics of many of the materials, as well as a brief mention of their occurrences.

The compilation of accurate and dependable figures is an extremely difficult undertaking, and the State Mineralogist takes the opportunity of here expressing his appreciation of the cooperation of the producers in making this work possible. A fuller appreciation of the value of early responses to the requests sent out in January will result in earlier completion of the manuscript. Statistics lose much of their value if their publication is unnecessarily delayed.

Some of the data relative to properties and uses of many of the minerals herein described are repeated from preceding reports, as it is intended that this annual statistical bulletin shall be somewhat of a compendium of information on California's commercial minerals and their utilization.

WALTER W. BRADLEY,  
State Mineralogist.





# MINERAL INDUSTRY, CALIFORNIA, 1934

## DATA COMPILED FROM DIRECT RETURNS FROM PRODUCERS IN ANSWER TO INQUIRIES SENT OUT BY THE CALIFORNIA STATE DIVISION OF MINES, FERRY BUILDING, SAN FRANCISCO, CALIFORNIA

### CHAPTER ONE

The total value for the mineral output for California for the year 1934 was \$237,374,709, being an increase of \$30,885,651 over the total of 1933 which was \$206,489,058. There were fifty-nine different mineral substances, exclusive of a segregation of various stones grouped under gems; and all fifty-eight counties of the state contributed to the list.

As revealed by the data following, the salient features of 1934 compared with the previous year were: All mineral groups and nearly all of the important mineral substances showed increased values, led by petroleum, gold, borates, cement, miscellaneous stone, silver, mineral water, quicksilver, tungsten ore, diatomite, brick and hollow building tile. Those showing a decrease in value were natural gas, copper, potash, limestone.

Of the fuels, petroleum showed an increase in value of \$16,465,699 and an increase in amount from 172,139,362 barrels to 174,721,282 barrels of crude oil. The average prices received for all gravities of crude oil were slightly higher than in 1933 and the prices for 1934 were those that took effect on September 6, 1933, and continued the same throughout the year. Natural gas showed a decrease in amount utilized from 271,743,544 M cu. ft. to 263,207,517 M cu. ft. with a decreased total value from \$15,403,514 to \$14,408,761.

Of the metals, the gold yield showed an increase from 613,578.85 fine ounces to 719,063.92 fine ounces and in value from \$15,683,075 to \$25,131,284. The gold value in 1934 was calculated on a weighted value of \$34.95 per fine ounce, while that for 1933 was \$25.56 per fine ounce. Silver increased from 402,591 fine ounces worth \$140,907 to 844,413 fine ounces worth \$545,883 and quicksilver from 4,102 flasks valued at \$229,472 to 7,946 flasks worth \$534,135; lead, tungsten and zinc also showed increased output and value, while copper and chromite decreased in value of production. Iron and manganese ores were again added to the active list.

Of the structural materials, cement increased from 7,284,031 barrels worth \$10,331,395 to 8,936,085 barrels valued at \$12,445,616; miscellaneous stone from a total value of \$6,871,580 to \$7,131,330; brick and hollow building tile from \$1,520,481 to \$1,644,661; and granite, lime, magnesite, bituminous rock and sandstone also showed increases

for the year. Decreases were registered by marble (including onyx and travertine) and slate.

Of the industrial materials, increased values were registered by mineral water, barytes, diatomite, silica, pottery clay, pyrite, and talc and soapstone; with slight decline in value shown by gypsum, dolomite, limestone, pumice and volcanic ash. The total value of this group increased from \$3,658,249 to \$4,276,566.

Of the salines, increases in total values were shown by borates, magnesium salts, bromine and calcium chloride, all other materials in this group showing decreased values. The group as a whole showed an increase in total value from \$8,652,224 to \$10,413,019.

### By Substances.

The following table shows the comparative yield of mineral substances of California for 1933 and 1934, as compiled from the returns received at the State Division of Mines, San Francisco, in answer to inquiry sent to producers:

| Substance                               | 1933                  |               | 1934                  |               | Increase +<br>Decrease—<br>Value |
|---|-----------------------|---------------|-----------------------|---------------|----------------------------------|
|   | Amount                | Value         | Amount                | Value         |                                  |
| Barite.....                             | 8,405 tons            | \$49,595      | 21,769 tons           | \$125,514     | \$75,919+                        |
| Bentonite (fuller's earth).....         | 4,605 tons            | 60,621        | 6,168 tons            | 69,325        | 8,704+                           |
| Borates.....                            | 197,495 tons          | 3,019,513     | 240,696 tons          | 5,524,262     | 2,504,749+                       |
| Brick & hollow building tile.....       | 1,520,481             | 1,520,481     | 1,644,661             | 1,644,661     | 124,180+                         |
| Cement.....                             | 7,284,081 bbls.       | 10,331,395    | 8,936,085 bbls.       | 12,445,616    | 2,114,221+                       |
| Chromite.....                           | .....                 | .....         | 294 tons              | 3,498         | .....                            |
| Clay (pottery).....                     | 141,629 tons          | 211,711       | 190,510 tons          | 245,900       | 34,189+                          |
| Coal.....                               | 2,612 tons            | 11,367        | 13,549 tons           | 52,720        | 41,353+                          |
| Copper.....                             | 992,515 lbs.          | 63,521        | 590,638 lbs.          | 47,252        | 16,269-                          |
| Dolomite.....                           | 54,456 tons           | 176,575       | .....                 | .....         | .....                            |
| Gems.....                               | .....                 | 690           | .....                 | 2,456         | 1,766+                           |
| Gold.....                               | 613,579 fine oss.     | 15,683,075    | 719,084 fine oss.     | 25,131,284    | 9,448,209+                       |
| Granite.....                            | .....                 | 183,706       | .....                 | 249,083       | 65,377+                          |
| Gypsum.....                             | 59,235 tons           | 120,451       | 58,149 tons           | 113,606       | 8,845-                           |
| Iodine.....                             | .....                 | .....         | 355,279 lbs.          | 423,016       | .....                            |
| Lead.....                               | 772,436 lbs.          | 28,583        | 804,911 lbs.          | 29,782        | 1,199+                           |
| Lime.....                               | 33,425 tons           | 271,619       | 32,500 tons           | 309,765       | 38,146+                          |
| Limestone.....                          | 207,371 tons          | 487,712       | 198,057 tons          | 461,139       | 26,573-                          |
| Magnesium salts.....                    | 2,073 tons            | 159,660       | 2,325 tons            | 194,642       | 34,982+                          |
| Marble.....                             | .....                 | 23,178        | .....                 | 10,759        | 12,419-                          |
| Mineral water.....                      | 15,650,406 gals.      | 719,746       | 19,882,436 gals.      | 1,071,197     | 351,451+                         |
| Natural Gas.....                        | 271,743,544 M cu. ft. | 15,403,514    | 263,207,517 M cu. ft. | 14,408,761    | 994,753-                         |
| Petroleum.....                          | 172,139,362 bbls.     | 143,063,972   | 174,721,282 bbls.     | 159,529,671   | 16,465,699+                      |
| Platinum.....                           | 237 oss.              | 7,255         | 520 oss.              | 14,884        | 7,629+                           |
| Pumice and volcanic ash.....            | 8,234 tons            | 61,087        | 9,951 tons            | 54,248        | 6,838-                           |
| Quicksilver.....                        | 4,102 flasks          | 229,472       | 7,946 flasks          | 534,135       | 304,663+                         |
| Salt.....                               | 321,311 tons          | 1,251,024     | 332,194 tons          | 1,222,810     | 23,214-                          |
| Sandstone.....                          | .....                 | 10,888        | .....                 | 14,245        | 3,357+                           |
| Silica (sand and quartz).....           | 70,329 tons           | 266,520       | 70,432 tons           | 296,643       | 30,123+                          |
| Silver.....                             | 402,591 fine oss.     | 140,907       | 844,413 fine oss.     | 545,883       | 404,976+                         |
| Slate.....                              | 5,343 tons            | 31,958        | 5,065 tons            | 24,245        | 7,713-                           |
| Soapstone and talc.....                 | 14,451 tons           | 153,668       | 13,920 tons           | 158,606       | 4,338+                           |
| Soda.....                               | 70,598 tons           | 1,019,130     | 99,380 tons           | 1,219,561     | 200,431+                         |
| Stone, miscellaneous <sup>b</sup> ..... | .....                 | 6,871,581     | .....                 | 7,131,330     | 259,749+                         |
| Sulphur.....                            | .....                 | .....         | 4,412 tons            | 67,656        | .....                            |
| Tungsten ore.....                       | 148 tons              | 76,605        | 261 tons              | 224,417       | 147,812+                         |
| Zinc.....                               | 290,222 lbs.          | 12,189        | 721,719 lbs.          | 31,034        | 18,845+                          |
| Unapportioned.....                      | .....                 | 4,766,089     | .....                 | 43,741,103    | 1,024,986-                       |
| Total value.....                        | .....                 | \$206,489,058 | .....                 | \$237,374,709 | .....                            |
| Net increase.....                       | .....                 | .....         | .....                 | .....         | \$30,885,651                     |

\* Included under 'Unappropriated.'

\* Includes onyx and travertine.

\* Includes macadam, crushed rock, ballast, rubble, rip rap, sand, gravel.

\* Includes bituminous rock, bromine, calcium chloride, carbon dioxide, chromite, diatomite, feldspar, fluorspar, graphite, iodine, magnesite, mica, mineral paint, molybdenum ore, potash, pyrite, sillimanite-andalusite-cyanite group, sulphur, tube mill pebbles, wollastonite.

\* Includes bituminous rock, asbestos, bromine, calcium chloride, carbon dioxide, diatomite, dolomite, feldspar, fluorspar, iron ore, magnesite, manganese ore, molybdenum ore, potash, pyrite, sillimanite-andalusite-cyanite group, paving blocks, tube mill pebbles, wollastonite.

**By Counties.**

The following table shows the comparative value of the mineral production of the various counties in the State for the years 1933 and 1934:

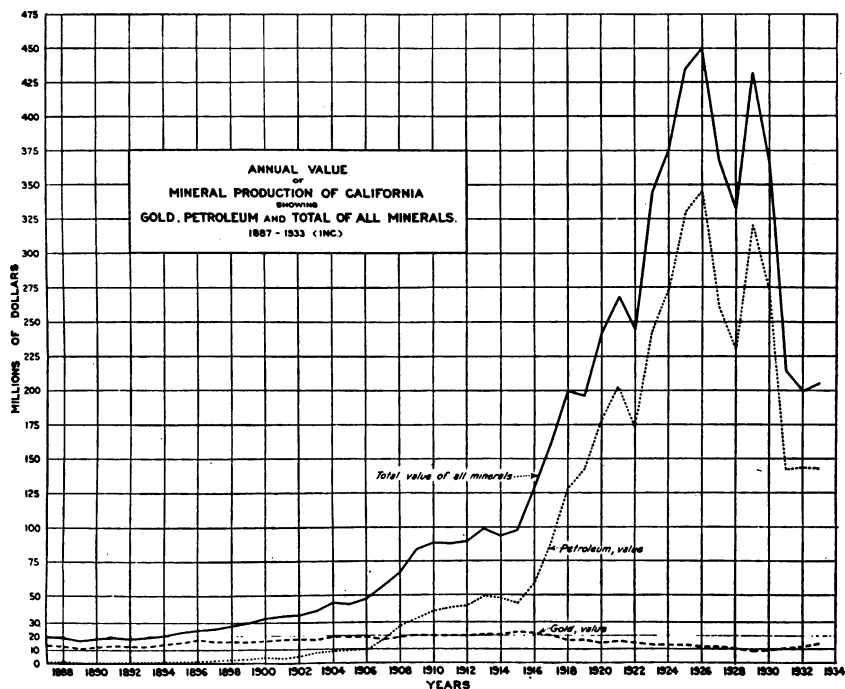
| <i>County</i>   | <i>1933<br/>Value</i> | <i>1934<br/>Value</i> |
|-----------------|-----------------------|-----------------------|
| Alameda         | \$1,930,111           | \$2,379,633           |
| Alpine          | 12,724                | 25,431                |
| Amador          | 2,028,598             | 2,400,161             |
| Butte           | 404,661               | 637,962               |
| Calaveras       | 938,981               | 2,196,592             |
| Colusa          | 6,396                 | 45,875                |
| Contra Costa    | 1,231,971             | 1,734,999             |
| Del Norte       | 3,062                 | 81,998                |
| El Dorado       | 920,747               | 1,738,576             |
| Fresno          | 3,901,103             | 5,772,807             |
| Glenn           | 11,690                | 30,608                |
| Humboldt        | 71,051                | 81,432                |
| Imperial        | 166,858               | 108,480               |
| Inyo            | 1,014,713             | 1,293,725             |
| Kern            | 27,877,930            | 37,053,187            |
| Kings           | 25,474,252            | 28,067,389            |
| Lake            | 134,851               | 260,481               |
| Lassen          | 45,739                | 28,318                |
| Los Angeles     | 68,785,294            | 66,359,227            |
| Madera          | 133,105               | 264,142               |
| Marin           | 205,150               | 183,354               |
| Mariposa        | 575,118               | 807,908               |
| Mendocino       | 35,283                | 14,351                |
| Merced          | 766,014               | 1,050,492             |
| Modoc           | 166,747               | 48,117                |
| Mono            | 81,147                | 212,438               |
| Monterey        | 114,040               | 190,902               |
| Napa            | 209,542               | 398,214               |
| Nevada          | 4,767,391             | 7,488,996             |
| Orange          | 19,263,581            | 25,746,031            |
| Placer          | 293,866               | 678,232               |
| Plumas          | 131,150               | 181,143               |
| Riverside       | 2,218,738             | 2,590,545             |
| Sacramento      | 3,172,763             | 3,877,757             |
| San Benito      | 247,479               | 266,857               |
| San Bernardino  | 8,976,485             | 10,537,050            |
| San Diego       | 620,881               | 487,266               |
| San Francisco   | 7,734                 | 28,641                |
| San Joaquin     | 153,127               | 148,097               |
| San Luis Obispo | 55,914                | 138,453               |
| San Mateo       | 1,569,480             | 1,562,490             |
| Santa Barbara   | 7,011,773             | 7,570,191             |
| Santa Clara     | 534,378               | 386,445               |
| Santa Cruz      | 1,234,180             | 1,796,844             |
| Shasta          | 1,113,395             | 1,145,180             |
| Sierra          | 449,146               | 1,046,307             |
| Siskiyou        | 374,178               | 648,166               |
| Solano          | 16,996                | 23,641                |
| Sonoma          | 157,988               | 162,005               |
| Stanislaus      | 298,847               | 418,172               |
| Sutter          | 11,900                | 3,322                 |
| Tehama          | 30,334                | 39,575                |
| Trinity         | 359,503               | 650,620               |
| Tulare          | 178,613               | 184,474               |
| Tuolumne        | 264,979               | 423,588               |
| Ventura         | 14,558,096            | 13,688,749            |
| Yolo            | 16,823                | 38,027                |
| Yuba            | 1,150,962             | 1,951,046             |
| Totals          | \$206,489,058         | \$237,374,709         |

**Total Mineral Production of California, by Years, Since 1887.**

The following tabulation gives the total value of mineral production of California by years since 1887, in which year compilation of such data by the State Mining Bureau (now Division of Mines) began. At the side of these figures have been placed the values of the most important metal and nonmetal items—gold and petroleum.

In the same period copper made an important growth beginning with 1897 following the entry of the Shasta County mines, and later Plumas County. Cement increased rapidly from 1902, while crushed

rock, sand and gravel as a group paralleled the cement increase. Quicksilver has been up and down. Mineral water and salt have always been important items, but the values fluctuate. Borax has increased materially since 1896. War-time increases, 1915-1918, were shown by chromite, copper, lead, magnesite, manganese, silver, tungsten and zinc. Most of these have since declined, though silver, structural materials and copper increased in 1920-1924, also lead and magnesite in 1923; lead and zinc in 1925; zinc in 1926, with silver declining; an increase in quicksilver in 1927-1928, with declines in other metals and by petroleum. Natural gas has shown a steady increase since 1907, and since 1928 its value has been second only to petroleum.



## Total Mineral Production of California, by Years, Since 1887

| Year          | Total value of<br>all minerals | Gold, value          | Petroleum,<br>value    |
|---------------|--------------------------------|----------------------|------------------------|
| 1887          | \$19,785,868                   | \$13,588,614         | \$1,357,144            |
| 1888          | 19,469,320                     | 12,750,000           | 1,380,666              |
| 1889          | 16,681,731                     | 11,212,913           | 368,048                |
| 1890          | 18,039,666                     | 12,309,793           | 384,200                |
| 1891          | 18,872,413                     | 12,728,869           | 401,264                |
| 1892          | 18,300,168                     | 12,571,900           | 561,333                |
| 1893          | 18,811,261                     | 12,422,811           | 608,092                |
| 1894          | 20,203,294                     | 13,923,281           | 1,064,521              |
| 1895          | 22,844,663                     | 15,334,317           | 1,000,235              |
| 1896          | 24,291,398                     | 17,181,562           | 1,180,793              |
| 1897          | 25,142,441                     | 15,871,401           | 1,918,269              |
| 1898          | 27,289,079                     | 15,906,478           | 2,376,420              |
| 1899          | 29,313,460                     | 15,336,031           | 2,660,793              |
| 1900          | 32,622,945                     | 15,863,355           | 4,152,928              |
| 1901          | 34,355,981                     | 16,989,044           | 2,961,102              |
| 1902          | 35,069,105                     | 16,910,320           | 4,692,189              |
| 1903          | 37,759,040                     | 16,471,264           | 7,313,271              |
| 1904          | 43,778,348                     | 19,109,600           | 8,317,809              |
| 1905          | 43,060,227                     | 19,197,043           | 9,007,820              |
| 1906          | 46,776,085                     | 18,732,452           | 9,238,020              |
| 1907          | 55,697,949                     | 16,727,928           | 16,783,943             |
| 1908          | 66,363,198                     | 18,761,559           | 26,566,181             |
| 1909          | 82,972,209                     | 20,237,870           | 32,398,187             |
| 1910          | 88,419,079                     | 19,715,440           | 37,683,542             |
| 1911          | 87,497,879                     | 19,738,908           | 40,552,088             |
| 1912          | 88,972,385                     | 19,713,478           | 41,868,344             |
| 1913          | 98,644,639                     | 20,406,958           | 48,578,014             |
| 1914          | 93,314,773                     | 20,653,496           | 47,487,109             |
| 1915          | 96,663,369                     | 22,442,296           | 43,503,837             |
| 1916          | 127,901,610                    | 21,410,741           | 57,421,334             |
| 1917          | 161,202,962                    | 20,087,504           | 86,976,209             |
| 1918          | 199,753,837                    | 16,529,162           | 127,459,221            |
| 1919          | 195,830,002                    | 16,695,955           | 142,610,563            |
| 1920          | 242,099,667                    | 14,311,043           | 178,394,937            |
| 1921          | 268,157,472                    | 15,704,822           | 203,138,225            |
| 1922          | 245,183,826                    | 14,670,346           | 173,381,265            |
| 1923          | 344,024,678                    | 13,379,013           | 242,731,309            |
| 1924          | 374,620,789                    | 13,150,175           | 274,652,874            |
| 1925          | 434,519,660                    | 13,065,330           | 330,603,829            |
| 1926          | 450,331,856                    | 11,923,481           | 315,546,677            |
| 1927          | 366,781,394                    | 11,671,018           | 260,735,498            |
| 1928          | 332,224,233                    | 10,785,315           | 229,998,680            |
| 1929          | 432,248,228                    | 8,526,703            | 321,366,863            |
| 1930          | 365,604,695                    | 9,451,162            | 271,699,046            |
| 1931          | 215,964,420                    | 10,814,162           | 141,835,723            |
| 1932          | 119,196,493                    | 11,765,726           | 142,890,247            |
| 1933          | 206,489,058                    | 15,683,075           | 143,063,972            |
| 1934          | 237,374,709                    | 25,131,284           | 159,529,671            |
| <b>Totals</b> | <b>\$6,711,129,562</b>         | <b>\$757,563,998</b> | <b>\$4,230,414,305</b> |

## CHAPTER TWO

## FUELS

Among the most important mineral products of California are its fuels. This subdivision includes coal, natural gas, and petroleum, the combined values which made up practically 73 per cent of the State's entire mineral output for the year 1934.

There are deposits of peat known in several localities in California, small amounts of which are used as a fertilizer, and in stock-food preparations, but none has yet been recorded as utilized for fuel.

Comparison of values during 1933 and 1934 is shown in the following table:

| Substance         | 1933                  |               | 1934                  |               | Increase +<br>Decrease—<br>Value |
|-------------------|-----------------------|---------------|-----------------------|---------------|----------------------------------|
|                   | Amount                | Value         | Amount                | Value         |                                  |
| Coal.....         | 2,612 tons            | \$11,367      | 13,548 tons           | \$52,720      | \$41,353 +                       |
| Natural gas.....  | 271,734,544 M cu. ft. | 15,403,514    | 263,207,517 M cu. ft. | 14,408,761    | 994,753—                         |
| Petroleum.....    | 172,139,362 bbls.     | 143,063,972   | 174,721,282 bbls.     | 159,529,671   | 16,465,699 +                     |
| Total values..... |                       | \$158,478,853 |                       | \$173,991,152 |                                  |
| Net increase..... |                       |               |                       |               | \$15,512,299 +                   |

## COAL

*Bibliography:* State Mineralogist Reports VII, XII–XV (inc.), XVII, XIX–XXVIII (inc.), XXVI. U. S. Geol. Surv., Bulletins 285, 316, 431, 471, 581; Ann. Rept. 22, P. III.

Coal produced in California during 1934 totaled 13,549 short tons valued at \$52,720, as compared with the 1933 output, which was 2612 tons worth \$11,367. The material mined in 1934 came from a single property each, in Amador, Monterey, Santa Cruz, and Trinity counties. This coal was consumed by the local market and also used on the property for camp purposes, power and forge, to carry on regular operations and development work.

**Total Coal Production of California.**

The very considerable output of coal in the years previous to 1883 was almost entirely from the Mount Diablo district, Contra Costa County. Later the Tesla mine in Corral Hollow, Alameda County, was an important producer for a few years. Stone Canyon, Monterey County, was also an important producer for a short time, and there has been some coal shipped from properties in Amador, Fresno, Orange, Riverside, Siskiyou and Trinity counties. The following tabulation gives the annual tonnages and values, according to available records:

## Coal Output and Value, by Years

| Year | Tons    | Value     | Year   | Tons      | Value        |
|------|---------|-----------|--------|-----------|--------------|
| 1861 | 6,620   | \$38,065  | 1899   | 160,941   | \$420,109    |
| 1862 | 23,400  | 134,550   | 1900   | 176,956   | 535,531      |
| 1863 | 43,200  | 248,400   | 1901   | 150,724   | 401,772      |
| 1864 | 50,700  | 291,525   | 1902   | 88,460    | 248,622      |
| 1865 | 60,530  | 348,048   | 1903   | 93,026    | 265,383      |
| 1866 | 84,020  | 483,115   | 1904   | 79,062    | 376,494      |
| 1867 | 124,690 | 716,968   | 1905   | 46,500    | 144,500      |
| 1868 | 143,676 | 826,137   | 1906   | 24,850    | 61,600       |
| 1869 | 157,234 | 904,096   | 1907   | 23,734    | 55,849       |
| 1870 | 141,890 | 815,868   | 1908   | 18,496    | 55,503       |
| 1871 | 152,493 | 876,835   | 1909   | 49,389    | 216,913      |
| 1872 | 190,859 | 1,097,439 | 1910   | 11,033    | 23,484       |
| 1873 | 186,611 | 1,073,013 | 1911   | 11,047    | 18,297       |
| 1874 | 215,352 | 1,238,274 | 1912   | 14,484    | 39,092       |
| 1875 | 166,638 | 958,169   | 1913   | 25,198    | 85,809       |
| 1876 | 128,049 | 736,282   | 1914   | 11,859    | 28,806       |
| 1877 | 107,789 | 619,787   | 1915   | 10,299    | 26,662       |
| 1878 | 134,237 | 771,863   | 1916   | 4,037     | 7,030        |
| 1879 | 147,879 | 850,304   | 1917   | 3,527     | 7,691        |
| 1880 | 236,950 | 1,362,463 | 1918   | 6,343     | 16,149       |
| 1881 | 140,000 | 805,000   | 1919   | 2,983     | 8,203        |
| 1882 | 112,592 | 647,404   | 1920   | 2,078     | 5,450        |
| 1883 | 76,162  | 380,810   | 1921   | 12,467    | 63,578       |
| 1884 | 77,485  | 309,950   | 1922   | 27,020    | 135,100      |
| 1885 | 71,615  | 286,460   | 1923   | 1,010     | 5,090        |
| 1886 | 100,000 | 300,000   | 1924   | 1,425     | 8,800        |
| 1887 | 50,000  | 150,000   | 1925   | 730       | 3,880        |
| 1888 | 95,000  | 380,000   | 1926   | 1,100     | 5,000        |
| 1889 | 121,280 | 288,232   | 1927   | 200       | 1,100        |
| 1890 | 110,711 | 283,019   | 1928   | 782       | 4,542        |
| 1891 | 93,301  | 204,902   | 1929   | 450       | 2,476        |
| 1892 | 85,178  | 209,711   | 1930   | 10,885    | 59,858       |
| 1893 | 72,603  | 167,555   | 1931   | 12,551    | 77,607       |
| 1894 | 59,887  | 139,862   | 1932   | 9,508     | 36,468       |
| 1895 | 79,858  | 193,790   | 1933   | 2,612     | 11,367       |
| 1896 | 70,649  | 161,335   | 1934   | 13,549    | 52,720       |
| 1897 | 87,449  | 196,255   |        |           |              |
| 1898 | 143,045 | 337,475   | Totals | 5,258,947 | \$23,349,496 |

The tonnages in the above table for the years 1861-1886 (incl.) are taken from the U. S. Geological Survey, "Mineral Resources of the U. S., 1910," p. 107. The values assigned for the years previous to 1883 are those given by W. A. Goodyear (Mineral Res., 1882, pp. 93-94), being an average of \$5.75 per ton. From 1887 to date the figures are those of the California State Mining Bureau.

## NATURAL GAS

*Bibliography:* State Mineralogist Reports VII, X, XII, XIII, XIV, XXIX. Bulletins 3, 16, 19, 69, 73, 89. Monthly Summary Oil and Gas Supervisor, Dec., 1919; Aug., 1922; Mar., 1923; Mar. and Apr., 1926.

Statistics on the production of natural gas in California are in a considerable degree difficult to arrive at, as much of it that is utilized directly at the wells for heating, lighting, and driving gas engines is not measured. Hence, it is necessary to approximate the output of many of the operators in the oil fields, estimated on the number of lights, and on the number and horsepower of gas engines and steam boilers thus operated. The figures here given are for gas utilized locally and also that sold for distribution to consumers; and we consider are not over-estimated, particularly in the six oil-producing counties. It must be remembered that some of our important oil fields are removed many

miles from the site of any other industry, and that the gathering of small amounts of gas and transporting it for any considerable distance may not always be profitable, nor is it often possible to have pipe-line facilities available to handle the gas accompanying the early gas production in newly developed fields. Wherever feasible, casing-head gas is used in driving gas engines for pumping and drilling, and in firing the boilers of steam-driven plants.

**Actual Production of Natural Gas—How Disposed of in California—1934**

|                      | <i>Production<br/>M cu. ft.</i> | <i>Utilized<br/>M cu. ft.</i> | <i>Wasted<br/>M cu. ft.</i> | <i>Stored<br/>M cu. ft.</i> |
|----------------------|---------------------------------|-------------------------------|-----------------------------|-----------------------------|
| Fresno -----         | 19,680,080                      | 19,680,080                    | -----                       | -----                       |
| Kern -----           | 24,145,999                      | 21,309,723                    | 1,018,844                   | 1,817,432                   |
| Kings -----          | 99,886,719                      | 96,939,145                    | 2,765,540                   | 182,034                     |
| Los Angeles -----    | 59,680,662                      | 58,220,382                    | 606,214                     | 854,066                     |
| Orange -----         | 32,368,357                      | 21,256,008                    | 10,967,399                  | 144,950                     |
| Santa Barbara -----  | 5,384,021                       | 4,860,533                     | 305,760                     | 217,728                     |
| Ventura -----        | 42,459,774                      | 40,767,122                    | 1,056,281                   | 636,371                     |
| Other counties ----- | 174,524                         | 174,524                       | -----                       | -----                       |
| Totals -----         | 283,780,136                     | 263,207,517                   | 16,720,038                  | 3,852,581                   |

**Production and Value.**

There is rather a wide variation in prices quoted for natural gas because a considerable part is used directly in the field for driving gas engines and firing boilers, and is therefore not measured nor sold. Such companies as have placed a valuation on the gas that was thus used in 1934 gave from 2¢ to 85¢ per 1000 cu. ft. at the well. From the totals shown in the tabulation following herein, the average value for all fields in 1934 works out at approximately 5.4¢ per M. cu. ft. Approximately 7000 cu. ft. of gas is equal to one barrel of oil in heating value, and is so accounted for by many operators. In driving gas engines, about 4000 cu. ft. per 24 hr. are consumed by a 25-h.p. engine, and 63,700 cu. ft. per day for heating a 70-h.p. steam boiler, which figures have been utilized in compiling this report, in those cases where gas was not metered.

**Utilized Production of Natural Gas in California, 1934**

|  | <i>M cu. ft.</i> | <i>Value</i> |
|--|------------------|--------------|
| Fresno -----   | 19,680,080       | \$1,235,707  |
| Kern -----   | 21,309,723       | 1,017,661    |
| Kings -----  | 96,939,145       | 4,957,070    |
| Los Angeles -----  | 58,220,382       | 3,421,320    |
| Orange -----   | 21,256,008       | 1,366,560    |
| Santa Barbara -----  | 4,860,533        | 316,360      |
| Ventura -----  | 40,767,122       | 2,032,849    |
| Butte, Humboldt, Lake, Mendocino, Monterey, Sacramento, San Joaquin, San Mateo, Santa Clara, Sutter* ----- | 174,524          | 61,234       |
| Totals -----   | 263,207,517      | \$14,408,761 |

\* Combined to conceal output of operators in each.

The above totals were a decrease in both amount and value from those of 1933 output, which was 271,743,544 M. cu. ft. valued at \$15,403,514. Kings County had the largest production, exceeding Los Angeles County which led all other counties until 1933. All the large producing counties of natural gas showed increased outputs and values with the exception of Kings and Los Angeles counties.

**Natural Gas Production in California Since 1888.**

The production of natural gas in California by years since 1888 is given in the following table. The first economic use of natural gas in



California was from the famous courthouse well at Stockton, bored in 1854-1858. Beginning about 1883 and for several succeeding years, a number of gas wells were brought in around Stockton, and later at Sacramento. Natural gas was known in a number of other localities, and occasionally utilized in a small way, notably at Kelseyville in Lake County, and in Humboldt County near Petrolia and Eureka, but there are no available authentic records of amounts or values previous to the year 1888. The most important developments in the commercial production of natural gas have been coincident with developments in the oil fields, by utilizing the casing-head gas as well as that from dry-gas wells.

Natural Gas Production In California Since 1888

| Year      | M cubic feet | Value     | Year        | M cubic feet  | Value         |
|-----------|--------------|-----------|-------------|---------------|---------------|
| 1888..... | *12,000      | \$10,000  | 1913.....   | 14,210,836    | \$1,053,292   |
| 1889..... | *14,500      | 12,680    | 1914.....   | 16,529,963    | 1,049,470     |
| 1890..... | *41,250      | 33,000    | 1915.....   | 21,992,892    | 1,706,480     |
| 1891..... | *39,000      | 30,000    | 1916.....   | 28,134,365    | 2,871,751     |
| 1892..... | *75,000      | 55,000    | 1917.....   | 44,343,020    | 2,964,922     |
| 1893..... | *84,000      | 68,500    | 1918.....   | 46,373,052    | 3,289,524     |
| 1894..... | *85,000      | 75,000    | 1919.....   | 52,173,503    | 4,041,217     |
| 1895..... | *110,000     | 100,000   | 1920.....   | 58,567,772    | 3,898,286     |
| 1896..... | *131,000     | 110,157   | 1921.....   | 67,043,797    | 4,704,678     |
| 1897..... | *71,300      | 62,657    | 1922.....   | 103,628,027   | 6,990,030     |
| 1898..... | *111,165     | 74,424    | 1923.....   | 240,405,397   | 15,661,433    |
| 1899..... | 115,110      | 95,000    | 1924.....   | 209,021,596   | 15,153,140    |
| 1900..... | 40,566       | 34,578    | 1925.....   | 194,719,924   | 15,890,082    |
| 1901..... | 120,800      | 92,034    | 1926.....   | 214,549,477   | 19,465,347    |
| 1902..... | 120,968      | 99,443    | 1927.....   | 224,686,940   | 20,447,294    |
| 1903..... | 120,134      | 75,237    | 1928.....   | 260,887,116   | 22,260,947    |
| 1904..... | 144,437      | 91,035    | 1929.....   | 400,129,201   | 29,675,546    |
| 1905..... | 148,345      | 102,479   | 1930.....   | 315,513,952   | 24,559,840    |
| 1906..... | 168,175      | 109,489   | 1931.....   | 344,959,920   | 16,690,695    |
| 1907..... | 169,991      | 114,759   | 1932.....   | 284,168,872   | 16,272,061    |
| 1908..... | 842,883      | 474,584   | 1933.....   | 271,743,544   | 15,403,514    |
| 1909..... | 1,148,467    | 616,932   | 1934.....   | 263,207,517   | 14,408,761    |
| 1910..... | 10,579,933   | 1,676,367 |             |               |               |
| 1911..... | *5,000,000   | 491,859   | Totals..... | 3,709,984,707 | \$264,103,620 |
| 1912..... | *12,600,000  | 940,076   |             |               |               |

\* Quantity, in part, estimated, where values only were reported.

• Tabulations previous to 1933 included values of CO<sub>2</sub>, now showing under "Industrial Materials."

#### Gasoline from Natural Gas.

More or less gas usually accompanies the petroleum in the oil fields, and such gas carries varying amounts of gasoline. A total of 95 plants were in operation in 1934 recovering gasoline by compression or absorption from this 'casing-head' gas. After the gasoline is extracted the remaining 'dry gas' so far as practicable is taken into pipe lines, by which it is distributed to consumers, both domestic and commercial.

A total of 505,929,436 gallons of casing-head gasoline valued at \$31,089,877 was reported made from all fields in California by plants during 1934, compared with 497,350,701 gallons worth \$24,284,392 from 103 plants in 1933. The 1934 output was distributed as follows:

| County              | No.<br>plants | Gallons     | Value        |
|---------------------|---------------|-------------|--------------|
| Kern .....          | 18            | 38,914,431  | \$1,894,848  |
| Kings .....         | 7             | 152,815,682 | 9,966,451    |
| Los Angeles.....    | 40            | 192,680,096 | 12,058,948   |
| Orange .....        | 11            | 63,034,240  | 4,129,960    |
| Santa Barbara.....  | 6             | 10,643,968  | 541,758      |
| Ventura .....       | 11            | 47,813,416  | 2,494,998    |
| Other counties..... | 2             | 27,603      | 2,914        |
| Totals .....        | 95            | 505,929,436 | \$31,089,877 |

The usual recoveries of gasoline from natural gas vary from  $\frac{1}{2}$  gal. to 3 gal. per 1000 cu. ft. of gas handled, the average being about 1 gal. per 1000 cu. ft. The U. S. Bureau of Mines Report by Knudsen<sup>1</sup> gives the average recovery for 1934 as 1.544 gallons per 1000 cu. ft. of gas treated. His figures show the following production by methods:

|                     | <i>M cu. ft.<br/>natural<br/>gas treated</i> | <i>Gallons gaso-<br/>line recovered</i> | <i>Recovery<br/>gal. per M<br/>cu. ft.</i> |
|---------------------|--|---|--|
| Oil absorption----- | 321,693,015                                  | 498,258,022                             | 1.544                                      |

### PETROLEUM

*Bibliography:* State Mineralogist Reports IV, VII, X, XII, XIII, XXIX. Bulletins 3, 11, 16, 19, 31, 32, 63, 69, 73, 82, 84, 89. Reports of Oil and Gas Supervisor 1915 to date (issued in monthly chapters since April, 1919, to June, 1929, and quarterly from then on). U. S. Geol. Surv. Bulletins 213, 285, 309, 317, 321, 322, 340, 357, 398, 406, 431, 471, 541, 581, 603, 621, 623, 653, 691. Prof. Papers 116, 117. "American Petroleum; Supply and Demand"; Amer. Petr. Inst., 1925.

The crude petroleum produced in California during 1934 amounted to a total of 174,721,282 barrels, having a value of \$159,529,671 at the well. This was a decrease in quantity with an increased value as compared with the 1933 output, which was 172,139,362 barrels worth \$142,063,972.

This total of quantity is compiled from the monthly production reports filed by the operators with the State Oil and Gas Supervisor.

The question of the value of the crude oil yield at the well is a difficult one to settle with exactitude principally because a large part of the output is not sold until after refining. The large refiners are also large producers of crude oil which they send direct from well to plant, hence much of the crude oil is not sold as such.

The value used in the statistical reports of the State Mining Bureau and the Division of Mines from 1914 to 1927 (inc.) was derived from an average of actual sales of crude oil of all grades in each field of the State and their average applied to the total yield of each respective field. The 1929-1933 values, used by the Division of Mines, were obtained by using the production of crude oil by gravities produced in each field<sup>2</sup> and applying an average of current price quotations for crude oil at the well as compiled by California Oil and Gas Association.

The value given to the 1934 petroleum output by this department was obtained by using the average gravity oil for each field, to which was applied the average quotation for the year of said grade oil.

<sup>1</sup>Knudsen, E. T. The Petroleum situation in the Pacific Coast territory (Monthly for 1934), U. S. Bureau of Mines.

<sup>2</sup>By courtesy of Standard Oil Co. of California.

**TABLE A**  
**Production and Value of Crude Oil by Counties**

| County   | 1933        |               | 1934        |               |
|--|-------------|---------------|-------------|---------------|
|  | Barrels     | Value         | Barrels     | Value         |
| Fresno   | 4,516,246   | \$2,586,609   | 6,607,661   | \$4,295,980   |
| Kern   | 35,349,272  | 23,521,406    | 41,823,494  | 30,475,225    |
| Kings  | 21,663,622  | 20,253,320    | 21,393,483  | 23,104,962    |
| Los Angeles  | 67,299,626  | 60,023,645    | 60,297,000  | 59,711,578    |
| Orange   | 22,046,475  | 18,239,046    | 25,891,732  | 24,258,123    |
| Santa Barbara  | 6,395,679   | 5,999,786     | 6,648,120   | 6,322,148     |
| Ventura  | 14,793,286  | 12,398,253    | 12,007,550  | 11,331,335    |
| Colusa, San Bernardino, San Luis Obispo, San Mateo, Santa Clara, Tulare* | 75,156      | 41,610        | 52,242      | 30,320        |
| Totals   | 172,139,362 | \$142,063,972 | 174,721,282 | \$159,529,671 |

\* Combined to conceal the output of operators in each.

The foregoing totals show the average price of \$0.913 per barrel for the year 1934, as compared with \$0.831 in the year 1933, \$0.807 in 1932, \$0.753 in 1931, \$1.195 in 1930, and \$1.094 in 1929.

**TABLE B**  
**Average Price of Oil per Barrel, by Counties, 1925-1934**

| County          | 1925    | 1926    | 1927    | 1928    | 1929    | 1930    | 1931    | 1932    | 1933    | 1934    |
|-----------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Fresno          | \$1.094 | \$0.815 | \$0.830 | \$0.764 | \$0.519 | \$0.568 | \$0.551 | \$0.556 | \$0.573 | \$0.650 |
| Kern            | 1.432   | 1.445   | 1.139   | .835    | .741    | .838    | .636    | .658    | .665    | .729    |
| Kings           |         |         |         |         | 1.674   | 1.515   | .723    | .837    | .934    | 1.085   |
| Los Angeles     | 1.429   | 1.645   | 1.115   | 1.051   | 1.189   | 1.297   | .784    | .860    | .892    | .990    |
| Orange          | 1.417   | 1.559   | 1.207   | .935    | .986    | 1.060   | .753    | .762    | .827    | .937    |
| San Luis Obispo | 1.087   |         |         |         |         |         |         | .550    |         |         |
| Santa Barbara   | .914    | .793    |         | 1.108   | 1.255   | 1.404   | .954    | .962    | .848    | .951    |
| Santa Clara     | 1.634   |         |         |         |         |         |         | .550    |         |         |
| Ventura         | 1.710   | 1.512   | 1.177   | 1.098   | 1.150   | 1.396   | .771    | .849    | .838    | .944    |
| State averages  | \$1.422 | \$1.538 | \$1.127 | \$0.992 | \$1.094 | \$1.195 | \$0.753 | \$0.807 | \$0.831 | \$0.913 |

For several years previous to 1919, the State average value per barrel at the well for crude oil as determined by the statistical returns was noted to practically coincide with the quotations during the same years for 23° gravity oil in the San Joaquin Valley fields. In 1919 and since, the average values have worked out at figures corresponding to quotations up to, in one year as high as 28° oil, due to the large yield of high-gravity oils from the new fields in the Los Angeles-Orange counties area.

#### Features of 1934.

Summary of data for the year, as given by the State Oil and Gas Supervisor,<sup>1</sup> is indicated as follows:

#### Production.

"The total production in the state for the last six months of 1934 was 88,752,802 barrels of oil and 71,004,276 barrels of water. The production of oil for the year 1934 was, therefore, 174,720,186 barrels, an increase of 2,581,307 barrels compared with that of 1933.

"The production of oil for the second half of 1934 was 2,785,418 barrels more than for the first half. Water production increased 5,853,829 barrels during the same period. Summarized production

<sup>1</sup> Bush, R. D., Resume of the Oil Field Operations in 1934, Summary of Operations—California Oil Fields, Vol. 20, No. 3, January, February, and March, 1935.

records of the five districts over six-month periods in 1933 and 1934 are given in Table 1.

"Table 11 gives the segregated data of production of clean oil and water in the various fields of the state for the semiannual period closing December 31, 1934. These data are compiled by the field offices of the Division of Oil and Gas from the monthly production reports, giving the individual well productions, filed with the State Oil and Gas Supervisor by all producing companies.

"The estimated closed-in production was increased in 1934 from 170,710 barrels in January to 234,973 barrels in December. The increased closed-in production occurred principally in Kettleman North Dome, Coyote Hills, Dominguez, and Santa Fe Springs fields." \* \* \*

#### Storage and Price Changes.

"The total crude and refined petroleum in storage in Pacific Coast territory at the end of 1934 was 126,218,317 barrels according to American Petroleum Institute. The decrease in storage during the year was 25,540,950 barrels, compared with a decrease of 11,781,856 barrels during 1933. The total amount of crude and refined oil shipped to eastern ports during 1934 was 25,206,000 barrels or 6,292,000 barrels more than 1933 shipments. Prices of crude oil effective September 6, 1933, remained unchanged throughout 1934.

#### Drilling and Development.

"During 1934, 631 wells were reported to the State Oil and Gas Supervisor as ready to drill as compared with 596 wells in 1933. The outstanding events of 1934 were the completion of a large well extending considerably the known limits of the Playa del Rey field; the discovery of a deep zone in the Inglewood field; the completion in North Belridge of a large well in the deep Wagonwheel zone; resumption of development in the Edison field; the rapid development of the productive Mountain View field. These developments, as well as the details of operations in the five districts of the state as reported by the deputy supervisors, are given in the following pages."

#### TOTAL PETROLEUM PRODUCTION OF CALIFORNIA

The presence of oil seepages and springs in Los Angeles and Ventura counties was known and utilized in a small way early in the history of California. Some also was shipped to refineries at San Francisco from Santa Barbara and Humboldt counties. In the light of present-day developments, the following reference to the previous year's production of oil and its future prospects as expressed by the San Francisco Bulletin of January 8, 1866, is strikingly prophetic even though skeptical:

"It is possible that the small quantity received (40,000 or 50,000 gallons in 1865) may be the forerunner of many millions which will, at some future time, lubricate the wheels of commerce and set a trade at work excelling in variety any that has thus far been known on this coast. At present, however, we admit to being a little skeptical about the assumption of the astute Professor Silliman that California will be found to have more oil in its soil than all the whales in the Pacific Ocean."

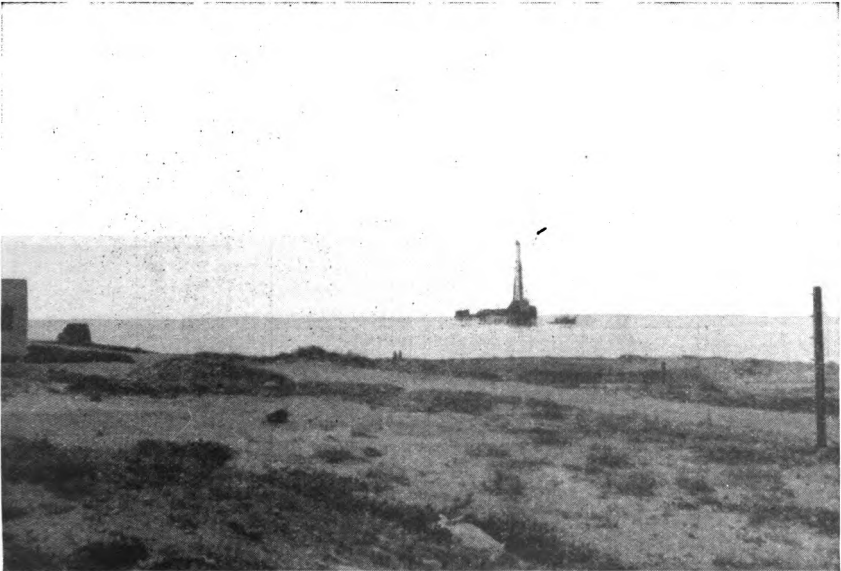
According to Hanks,<sup>1</sup> in 1874 production amounted to 36 bbl. per day from natural flows in Pico Cañon (Newhall), and at Sulphur Mountain (Ventura County), the oil being of 32° gravity average.

<sup>1</sup> Hanks, Henry G., Report IV of State Mineralogist, p. 298, 1884.

"Work was commenced in Pico Canyon in 1875 by drilling three shallow wells with spring pole, all of which yielded oil at depths of from 90 to 250 feet. Actual work of development commenced with steam machinery in 1877."<sup>1</sup>

In 1877 Pico averaged 40–50 bbl. daily, and Ventura 80 bbl. daily. In 1878, there was some production (at 60 bbl. per day, for a time) from wells in Moody Gulch, near Los Gatos, Santa Clara County, the oil being of 46° Baumé.

The first wells in the Coalinga, Fresno County, and Summerland, Santa Barbara County, fields were drilled in 1890, but Coalinga did not make its influence felt conspicuously on the state's annual output until 1903. The Summerland yield never has been large. The Salt Lake field near Los Angeles began production in 1894 and in 1897 reached over a million barrels annually.



Well of Rincon Oil Company, in Pacific Ocean at Rincon Field, Ventura County.

*Photo by Walter W. Bradley.*

In the Kern County fields, the first well was drilled in Sunset in 1891, Midway in 1900, McKittrick in 1892, Kern River in 1899. The Sunset-Midway district attained a yield of over 4,000,000 bbl. in 1909, and over 20,000,000 bbl. in 1910. Kern River field produced over 3,000,000 bbl. in 1901.

The first well in the Santa Maria-Lompoc group, Santa Barbara County, was drilled in 1901, and the district advanced to a yield of over 3,000,000 bbl. annually in 1905.

The Whittier-Fullerton field in Los Angeles and Orange counties became an important factor in 1902. The Montebello field, Los Angeles County, was the conspicuous addition in 1918-1919; and Elk Hills, Kern County, with Huntington Beach and Richfield, Orange County, in 1920. In 1921, the new fields added were Long Beach and Santa Fe

<sup>1</sup> *Idem*, p. 301.

Springs, Los Angeles County; in 1922, Torrance field in Los Angeles County, and Wheeler Ridge field in Kern County; but the production from the large number of new wells started in these new Los Angeles County fields did not reach its peak until August and September, 1923. Dominguez (Compton) came in during 1923; followed by Rosecrans and Inglewood in 1924. Ventura recorded important additions to its producing area in 1925 and 1926. Seal Beach, Orange County, and Mt. Poso, Kern County, were the new fields added in 1926; Round Mountain, Kern County, and Rincon, Ventura County, were the new fields added in 1927; with Potrero in Los Angeles County, Elwood in Santa Barbara County and Kettleman Hills in Kings County in 1928.

During 1929 Playa del Rey was added to the oil fields in Los Angeles County.

The effect of the advent of these various fields to the producing column will be noted in the tabulation herewith, by years:

**TABLE C**  
**Total Petroleum Production in California**

| Year             | Barrels    | Value       | Year   | Barrels       | Value           |
|------------------|------------|-------------|--------|---------------|-----------------|
| To and inc. 1875 | a 175,000  | b \$472,500 | 1906   | 32,624,000    | \$9,238,020     |
| 1876             | 12,000     | 30,000      | 1907   | 40,311,171    | 16,783,943      |
| 1877             | 13,000     | 29,250      | 1908   | 48,306,910    | 26,566,181      |
| 1878             | 15,227     | 30,454      | 1909   | 58,191,723    | 32,398,187      |
| 1879             | 19,858     | 39,716      | 1910   | 77,697,568    | 37,689,542      |
| 1880             | 40,552     | 60,828      | 1911   | 84,648,157    | 40,552,088      |
| 1881             | 99,862     | 124,828     | 1912   | 89,689,250    | 41,868,344      |
| 1882             | 128,636    | 257,272     | 1913   | 98,494,532    | 48,578,014      |
| 1883             | 142,857    | 285,714     | 1914   | 102,881,907   | 47,487,109      |
| 1884             | 262,000    | 655,000     | 1915   | 91,146,620    | 43,503,837      |
| 1885             | 325,000    | 750,750     | 1916   | 90,262,557    | 57,421,334      |
| 1886             | a 377,145  | b 870,205   | 1917   | 95,396,309    | 86,976,209      |
| 1887             | 678,572    | 1,357,144   | 1918   | 99,731,177    | 127,459,221     |
| 1888             | 690,333    | 1,380,666   | 1919   | 101,182,962   | 142,610,563     |
| 1889             | 303,220    | 368,048     | 1920   | 103,377,361   | 178,394,937     |
| 1890             | 397,360    | 384,200     | 1921   | 112,599,860   | 203,138,225     |
| 1891             | 323,600    | 401,264     | 1922   | 138,468,222   | 173,381,265     |
| 1892             | 385,049    | 561,333     | 1923   | 262,875,690   | 242,731,309     |
| 1893             | 470,179    | 608,092     | 1924   | 228,933,471   | 274,652,874     |
| 1894             | 783,078    | 1,064,521   | 1925   | 232,492,147   | 330,609,829     |
| 1895             | 1,245,339  | 1,000,235   | 1926   | 224,673,281   | 345,546,677     |
| 1896             | 1,257,780  | 1,180,793   | 1927   | 231,195,774   | 260,735,498     |
| 1897             | 1,911,569  | 1,918,269   | 1928   | 231,811,465   | 229,998,680     |
| 1898             | 2,249,088  | 2,376,420   | 1929   | 292,534,221   | 321,366,863     |
| 1899             | 2,677,875  | 2,660,793   | 1930   | 227,328,988   | 271,699,046     |
| 1900             | 4,319,950  | 4,152,928   | 1931   | 188,310,605   | 141,835,723     |
| 1901             | 7,710,315  | 2,961,102   | 1932   | 177,745,286   | 142,890,247     |
| 1902             | 14,356,910 | 4,692,189   | 1933   | 172,139,362   | 143,063,972     |
| 1903             | 24,340,839 | 7,313,271   | 1934   | 174,721,282   | 159,529,671     |
| 1904             | 29,736,003 | 8,317,809   |        |               |                 |
| 1905             | 34,275,701 | 9,007,820   | Totals | 4,239,405,755 | \$4,234,020,822 |

<sup>a</sup> U. S. G. S., Min. Res. of U. S., 1886, p. 440, for quantities to and including 1886.

<sup>b</sup> Values have been estimated for the years to and including 1886, after consulting a number of contemporaneous publications, including the Mining & Scientific Press, Reports of the State Mineralogist, and U. S. Reports. The figures for 1887 to date are from records of the State Mining Bureau.

#### Well Data.

The following table is compiled from monthly statements issued by the American Petroleum Institute:

TABLE D  
Wells Operated, by Fields, 1934

| Field                              | Wells<br>producing<br>Dec. 1933 | Wells<br>producing<br>Dec. 1934 | Wells<br>com-<br>pleted<br>during<br>year | Daily<br>initial<br>output | Wells<br>aban-<br>doned<br>during<br>year | Bbls.<br>per well<br>produced<br>per day<br>Dec. 1933 | Bbls.<br>per well<br>produced<br>per day<br>Dec. 1934 |
|------------------------------------|---------------------------------|---------------------------------|---|----------------------------|---|---|---|
| GROUP No. 1—Belridge—North         |                                 | 23                              | 4   | 21,677                     | 1   |   | 229.4   |
| Belridge—South                     |                                 | 140                             |   |                            | 2   |   | 21.6  |
| Coalinga                           | 866                             | 952                             | 1   | 55                         | 8   | 17.3  | 18.8  |
| Edison                             |                                 | 14                              | 11  | 3,287                      | 7   |   | 106.1   |
| Elk Hills                          | 218                             | 168                             |   |                            | 1   | 50.6  | 47.8  |
| Fruitvale                          | 64                              | 67                              | 8   | 4,685                      | 5   | 68.5  | 52.6  |
| Kern River                         | 1,104                           | 1,385                           | 5   | 681                        | 10  | 7.6   | 7.5   |
| Kettleman M. D.                    | 1                               | 2                               | 1   | 1,250                      |   | 545.0   | 252.5   |
| Kettleman N. D.                    | 48                              | 75                              | 41  | 286,592                    | 1   | 1,101.2   | 786.3   |
| Lost Hills—Belridge                | 286                             |                                 |   |                            |   | 37.9  |   |
| Lost Hills                         |                                 | 315                             |   |                            |   |   | 14.4  |
| McKittrick                         | 167                             | 184                             | 2   | 194                        | 5   | 13.4  | 17.1  |
| Midway-Sunset                      | 2,065                           | 2,478                           | 11  | 3,715                      | 35  | 24.7  | 20.7  |
| Mountain View                      | 6                               | 50                              | 49  | 70,881                     | 6   | 505.8   | 223.5   |
| Mt. Poso                           | 112                             | 152                             | 44  | 23,773                     | 12  | 74.9  | 74.8  |
| Round Mountain                     | 37                              | 49                              | 3   | 870                        | 2   | 129.8   | 95.1  |
| Wheeler Ridge                      | 34                              | 34                              |   |                            |   | 13.3  | 12.0  |
| GROUP No. 2—Capitan                | 6                               | 13                              | 5   | 2,442                      |   | 79.5  | 56.2  |
| Elwood                             | 47                              | 51                              | 9   | 8,839                      | 1   | 264.8   | 189.4   |
| Rincon                             | 34                              | 30                              | 1   | 24                         | 2   | 47.6  | 36.6  |
| San Miguelito                      | 2                               | 4                               | 1   | 333                        | 1   | 450.5   | 156.5   |
| Santa Barbara                      | 15                              | 52                              | 39  | 32,242                     | 5   | 37.7  | 81.2  |
| Santa Maria                        | 180                             | 187                             | 5   | 421                        | 12  | 28.7  | 25.4  |
| Summerland                         | 52                              | 17                              | 1   | (gas)                      |   | 1.4   | 2.4   |
| Ventura Avenue                     | 175                             | 178                             | 12  | 12,693                     | 11  | 190.6   | 131.2   |
| Ventura Newhall                    | 462                             | 464                             | 7   | 303                        | 36  | 7.2   | 8.9   |
| Watsonville                        | 7                               | 7                               |   |                            |   | 8.6   | 8.6   |
| GROUP No. 3—Brea—Olanda            |                                 | 352                             | 2   | 1,750                      | 3   |   | 29.8  |
| Coyote-East                        |                                 | 76                              | 3   | 175                        | 1   |   | 33.8  |
| Coyote-West                        | 99                              | 25                              | 9   | 4,078                      | 1   | 110.0   | 352.4   |
| Dominguez                          | 65                              | 71                              | 27  | 19,176                     | 4   | 288.4   | 357.8   |
| Fullerton (Brea—Olanda)            | 352                             |                                 |   |                            |   | 26.7  |   |
| Huntington Beach                   | 420                             | 469                             | 28  | 26,937                     | 32  | 114.3   | 86.8  |
| Inglewood                          | 206                             | 206                             | 8   | 10,151                     | 4   | 44.0  | 46.9  |
| Lawndale                           | 8                               | 6                               |   |                            | 2   | 20.8  | 21.1  |
| Long Beach                         | 996                             | 1,091                           | 83  | 19,843                     | 31  | 61.4  | 57.1  |
| Los Angeles—Salt Lake              | 169                             | 126                             |   |                            | 39  | 4.3   | 6.4   |
| Montebello                         | 175                             | 160                             | 9   | 2,479                      | 4   | 29.6  | 38.6  |
| Newport                            |                                 |                                 |   |                            |   |   |   |
| Playa del Rey                      | 175                             | 160                             | 6   | 8,486                      | 11  | 54.2  | 53.5  |
| Potrero                            | 11                              | 12                              |   |                            | 3   | 36.8  | 36.9  |
| Richfield                          | 193                             | 249                             |   |                            | 14  | 38.9  | 32.9  |
| Rosecrans                          | 66                              | 70                              |   |                            | 9   | 42.2  | 41.2  |
| Santa Fe Springs                   | 520                             | 492                             | 16  | 2,540                      | 23  | 81.3  | 78.6  |
| Seal Beach                         | 113                             | 110                             | 1   | 65                         | 2   | 94.1  | 79.1  |
| Torrance                           | 449                             | 474                             |   |                            | 8   | 15.0  | 14.7  |
| Whittier                           | 151                             | 159                             |   |                            |   | 7.3   | 7.0   |
| GROUP No. 4—Buttonwillow Gas Field | 1                               |                                 |   |                            |   | (Gas)   |   |
| Dudley Ridge Gas Field             |                                 |                                 |   |                            | 4   | (Gas)   |   |
| Golita Gas Field                   | 1                               |                                 |   |                            |   | (Gas)   |   |
| Miscellaneous drilling             |                                 |                                 |   |                            | 89  |   |   |
| Totals                             | 10,158                          | 11,399                          | 452                                       | 570,637                    | 447                                       | 46.8  | 42.3  |

#### Specific Gravity of Oils Produced.

The proportion of heavy and light oil produced in the various fields is shown in Table E, following, for which we are indebted to the Standard Oil Company. Specific gravities in California range from 8° Baumé in the Casmalia field, Santa Barbara County, to 60° in Kettleman Hills, Kings County.

California crude oils are all essentially of asphalt base, with a few notable exceptions. In the following localities are wells yielding crudes containing both asphalt and paraffine constituents: Oil City field, Coalinga; a few deep wells in East Side field, Coalinga; a considerable part of the Ventura County field; Western Minerals area, south of Maricopa; Wheeler Ridge, Kern County.

TABLE E  
Production of Light and Heavy Oils, by Fields, for 1934

| Field                       | Under 20°<br>(barrels) | 20° and above<br>(barrels) | Total<br>(barrels) |
|-----------------------------|------------------------|----------------------------|--------------------|
| <i>San Joaquin Valley—</i>  |                        |                            |                    |
| Belridge                    | 387,895                | 2,563,034                  | 2,950,929          |
| Edison                      | 74,638                 | 82,139                     | 156,777            |
| Coalinga                    | 2,860,513              | 3,727,680                  | 6,588,193          |
| Elk Hills                   | 868,860                | 2,465,268                  | 3,334,128          |
| Fruitvale                   | 136,554                | 1,179,236                  | 1,315,790          |
| Kern River                  | 3,697,586              | -----                      | 3,697,586          |
| Kettleman Hills             | -----                  | 21,390,903                 | 21,390,903         |
| Lost Hills                  | 697,295                | 773,966                    | 1,471,261          |
| McKittrick                  | 1,097,013              | -----                      | 1,097,013          |
| Midway-Sunset               | 7,436,735              | 12,248,720                 | 19,685,455         |
| Mountain View               | 7,037                  | 2,561,956                  | 2,568,993          |
| Mount Poso                  | 3,445,880              | -----                      | 3,445,880          |
| Round Mountain              | 1,097,352              | 710,615                    | 1,807,967          |
| Wheeler Ridge               | -----                  | 154,170                    | 154,170            |
| <i>Coastal—</i>             |                        |                            |                    |
| Arroyo Grande               | 43,578                 | -----                      | 43,578             |
| Capitan                     | 21,033                 | 173,562                    | 194,595            |
| Elwood                      | -----                  | 4,114,387                  | 4,114,387          |
| Lompoc                      | 28,505                 | 21,203                     | 49,708             |
| Newhall                     | 14,961                 | 75,862                     | 90,823             |
| Rincon                      | -----                  | 538,129                    | 538,129            |
| Santa Barbara               | 533,948                | 57,312                     | 591,260            |
| Santa Maria                 | 216,806                | 1,473,907                  | 1,690,713          |
| San Miguelito               | -----                  | 268,522                    | 268,522            |
| Summerland                  | 18,945                 | -----                      | 18,945             |
| Ventura Avenue              | -----                  | 9,890,420                  | 9,890,420          |
| Ventura County              | 45,195                 | 1,252,928                  | 1,298,123          |
| Watsonville                 | 23,725                 | -----                      | 23,725             |
| <i>Southern California—</i> |                        |                            |                    |
| Coyote                      | 69,609                 | 4,086,181                  | 4,155,790          |
| Del Rey                     | -----                  | 3,212,042                  | 3,212,042          |
| Dominguez                   | -----                  | 6,655,765                  | 6,655,765          |
| Huntington Beach            | 643,271                | 14,467,249                 | 15,110,520         |
| Inglewood                   | 842,065                | 2,536,052                  | 3,378,117          |
| Lawndale                    | -----                  | 55,054                     | 55,054             |
| Long Beach                  | 201,802                | 22,922,893                 | 23,124,695         |
| Los Angeles                 | 112,504                | -----                      | 112,504            |
| Montebello                  | 193,009                | 1,780,875                  | 1,973,884          |
| Olinda Brea                 | 428,872                | 3,316,484                  | 3,745,356          |
| Potrero                     | -----                  | 147,730                    | 147,730            |
| Richfield                   | 459,714                | 2,474,984                  | 2,934,698          |
| Rosecrans                   | -----                  | 1,037,055                  | 1,037,055          |
| Salt Lake                   | 182,404                | -----                      | 182,404            |
| Santa Fe                    | 37,250                 | 14,681,942                 | 14,719,192         |
| Seal Beach                  | -----                  | 3,499,356                  | 3,499,356          |
| Torrance                    | 1,506,094              | 1,014,753                  | 2,520,847          |
| Whittier                    | 280,880                | 110,416                    | 391,296            |
| Miscellaneous               | 2,662                  | 750                        | 3,412              |
| Totals                      | 27,714,190             | 147,723,500                | 175,437,690        |

#### Oil in "Storage."

Field, refinery, pipe-line and tank farm stocks of crude and refined products in the Pacific Coast<sup>1</sup> territory totaled 126,218,319 barrels December 31, 1934, as compared with 151,757,267 barrels on December 31, 1933. The total decrease in stock for the year was 25,540,930 barrels.

<sup>1</sup> Standard Oil Bulletin, February, 1935, p. 15.



|  | Dec. 31, 1934<br>(barrels) | Dec. 31, 1933<br>(barrels) |
|--|----------------------------|----------------------------|
| 1. Nongasoline-bearing crude, residuum, gas and Diesel oils-----       | 67,182,258                 | 92,664,274                 |
| 2. Gasoline-bearing crude-----   | 37,549,934                 | 35,879,163                 |
| 3. Unblended natural gasoline-----                                     | 2,446,840                  | 2,304,194                  |
| 4. Gasoline (not including distributing and service stations)-----     | 10,343,477                 | 12,687,385                 |
| 5. Naptha distillates-----   | 928,053*                   | 1,347,891*                 |
| 6. All other stocks-----   | 7,767,755#                 | 6,876,360#                 |
| 7. Total all stock-----  | 126,218,317                | 151,759,267                |
| * Estimated amount of unfinished gasoline contained in item No. 5----- | 753,082                    | 1,024,397                  |
| # Coke included in item No. 6-----                                     | 568,915                    | 620,313                    |

#### Utilization of California's Crude Oil.

Most of the crude oil produced in California is sent to storage reservoirs at tank farms near the oilfields and from these reservoirs by pipelines to the refineries, the larger ones of which are located in the vicinity of Los Angeles and on San Francisco Bay.

During 1934 the crude oil consumed in California, according to the U. S. Bureau of Mines <sup>1</sup> was 156,335,410 barrels sent to stills at the refineries; 140,750 barrels went to intercoastal shipments; 10,237,460 barrels to foreign shipments; and 13,788,532 barrels were either consumed as fuel or added to residuum and nongasoline bearing crude.

The production of petroleum products during 1934 is shown in Table F.

TABLE F

| Commodity   | Amount in barrels |
|---|-------------------|
| Crude petroleum run to stills-----                          | 156,335,410       |
| Natural gas gasoline-----                                   | 10,424,866        |
| Gasoline-----   | 60,204,177        |
| Kerosene-----   | 6,122,762         |
| Lubricating oil and greases-----                            | 1,656,020         |
| Gas oil and Diesel oil-----                                 | 23,618,504        |
| Residuum and nongasoline bearing crude <sup>(a)</sup> ----- | 62,478,485        |
| Asphalt and road oil-----                                   | 3,980,010         |
| Coke (in tons)-----   | 368,188           |
| Unfinished—Naptha distillates-----                          | 2,808,586         |
| Other unfinished oils-----                                  | 2,221,296         |
| Shortage and still gas production-----                      | 5,262,753         |
| Total <sup>(b)</sup> -----                                  | 166,760,276       |

<sup>(a)</sup> Includes 13,788,532 barrels of heavy crude oil added to residuum.

<sup>(b)</sup> Total of crude oil and natural gas gasoline.

#### Operating Data.

The following tabulation (Table G) is compiled from data published by the State Division of Oil and Gas, <sup>2</sup> semiannually, and here combined to show the entire year's operations for all fields. The districts are the geographical subdivisions as administered by that Division, and which are outlined on the accompanying map.

It will be noted that the State average yield of oil per-well-per-day was 50.6 barrels for the first six months of 1934 and 48.2 barrels for the second. This is somewhat higher than the figure 42.2 barrels average for December derived from American Petroleum Institute data as shown in Table D, on a previous page, due in part at least, to the fact that the latter is on a full-time basis, whereas the Division's figures allow for shut-down time.

<sup>1</sup> Knudsen, E. T. The petroleum situation in the Pacific Coast territory (monthly) 1934, U. S. Bureau of Mines.

<sup>2</sup> Summary of Operations—California Oil Fields; Division of Oil and Gas, Fifteenth Annual Report of State Oil and Gas Supervisor, Vol. 20, No. 1, July, Aug., Sept., 1934, and No. 3, Jan., Feb., March, 1935.

TABLE G. Production Statistics and Operating Data of California Oil Fields—1934

| Field                       | January 1 to June 30           |             |                          |                                     |       | July 1 to December 31               |                                |             |                          |                                     |       |                                     |
|-----------------------------|--------------------------------|-------------|--------------------------|-------------------------------------|-------|-------------------------------------|--------------------------------|-------------|--------------------------|-------------------------------------|-------|-------------------------------------|
|                             | Average number of wells—actual | Oil (bbls.) | Number of days producing | Production per well per day (bbls.) |       | Percent- age of time wells produced | Average number of wells—actual | Oil (bbls.) | Number of days producing | Production per well per day (bbls.) |       | Percent- age of time wells produced |
|                             |                                |             |                          | Oil                                 | Water |                                     |                                |             |                          | Oil                                 | Water |                                     |
| Distr. 1—Beverly Hills..... | 11                             | 42,576      | 1,559                    | 27.3                                | 24.7  | 78.3                                | 11                             | 51,604      | 1,758                    | 29.3                                | 23.2  | 86.9                                |
| Brea-Olinda.....            | 321                            | 1,760,782   | 51,644                   | 34.1                                | 12.0  | 77.9                                | 331                            | 1,998,260   | 54,835                   | 36.4                                | 11.8  | 90.0                                |
| Coyote Hills.....           | 107                            | 1,985,980   | 14,953                   | 132.8                               | 38.3  | 88.2                                | 113                            | 2,140,991   | 16,243                   | 131.8                               | 38.8  | 78.1                                |
| Dominguez.....              | 65                             | 3,279,568   | 9,942                    | 329.9                               | 55.7  | 84.5                                | 74                             | 3,392,702   | 11,344                   | 299.1                               | 51.3  | 83.3                                |
| Huntington Beach.....       | 460                            | 7,459,135   | 68,618                   | 108.7                               | 50.3  | 82.4                                | 470                            | 7,621,912   | 73,382                   | 103.9                               | 50.1  | 84.9                                |
| Ingewood.....               | 198                            | 1,629,279   | 28,451                   | 57.3                                | 49.4  | 79.4                                | 201                            | 1,754,087   | 28,288                   | 62.0                                | 55.6  | 76.5                                |
| Lawndale.....               | 7                              | 28,463      | 1,237                    | 23.0                                | 44.8  | 97.6                                | 6                              | 25,416      | 1,063                    | 23.9                                | 44.7  | 96.3                                |
| Long Beach.....             | 1,059                          | 11,246,651  | 163,911                  | 68.6                                | 83.3  | 85.5                                | 1,100                          | 11,338,982  | 173,730                  | 65.2                                | 83.3  | 85.8                                |
| Los Angeles City.....       | 90                             | 33,052      | 13,534                   | 2.1                                 | 4.1   | 95.4                                | 85                             | 33,269      | 15,195                   | 2.2                                 | 1.5   | 97.2                                |
| Montebello.....             | 169                            | 929,707     | 24,753                   | 37.6                                | 100.7 | 80.9                                | 168                            | 1,004,083   | 27,135                   | 39.2                                | 106.9 | 87.8                                |
| Newhall.....                | 75                             | 45,060      | 13,363                   | 3.4                                 | 3.8   | 98.4                                | 75                             | 46,792      | 13,238                   | 3.5                                 | 3.3   | 95.9                                |
| Playa del Rey.....          | 174                            | 1,588,221   | 28,560                   | 55.6                                | 65.3  | 90.7                                | 169                            | 1,464,801   | 28,486                   | 51.4                                | 75.7  | 91.6                                |
| Potrero.....                | 11                             | 75,776      | 1,709                    | 44.3                                | 38.0  | 85.8                                | 9                              | 73,438      | 1,475                    | 49.8                                | 50.1  | 89.1                                |
| Richfield.....              | 241                            | 1,403,784   | 33,265                   | 39.8                                | 12.3  | 80.8                                | 255                            | 1,520,878   | 40,755                   | 37.3                                | 15.6  | 86.9                                |
| Rosemead.....               | 69                             | 483,810     | 10,607                   | 45.6                                | 58.7  | 84.9                                | 74                             | 549,550     | 12,504                   | 43.9                                | 52.9  | 91.8                                |
| Salt Lake.....              | 8                              | 48,725      | 1,396                    | 4.6                                 | 143.0 | 96.4                                | 8                              | 49,910      | 1,402                    | 35.6                                | 150.0 | 95.2                                |
| Santa Fe Springs.....       | 542                            | 7,531,594   | 83,441                   | 90.3                                | 76.5  | 85.1                                | 511                            | 7,093,458   | 79,823                   | 88.9                                | 78.3  | 84.9                                |
| Sea Beach.....              | 114                            | 1,911,452   | 16,287                   | 117.4                               | 188.8 | 78.9                                | 108                            | 1,593,335   | 15,416                   | 103.4                               | 188.1 | 77.6                                |
| Torrance.....               | 468                            | 1,200,048   | 77,066                   | 15.6                                | 4.8   | 91.0                                | 493                            | 1,293,455   | 84,316                   | 15.3                                | 5.2   | 92.9                                |
| Whittier.....               | 161                            | 200,590     | 27,184                   | 7.4                                 | 17.4  | 93.3                                | 161                            | 190,659     | 27,172                   | 7.0                                 | 15.8  | 91.7                                |
| Los Angeles County.....     | 4,350                          | 42,884,263  | 675,480                  | 63.5                                | 53.9  | 85.8                                | 4,424                          | 43,304,469  | 707,730                  | 61.2                                | 55.2  | 86.9                                |
| Totals.....                 | 4,350                          | 42,884,263  | 675,480                  | 63.5                                | 53.9  | 85.8                                | 4,424                          | 43,304,469  | 707,730                  | 61.2                                | 55.2  | 86.9                                |
| Distr. 2—Bardsdale.....     | 102                            | 79,813      | 15,468                   | 5.2                                 | 1.2   | 83.8                                | 100                            | 82,127      | 17,230                   | 4.8                                 | 1.0   | 93.6                                |
| Conejo.....                 | 30                             | 841         | 5,430                    | 0.2                                 | 0.8   | 100.0                               | 31                             | 950         | 5,704                    | 0.2                                 | 0.8   | 100.0                               |
| Ojai.....                   | 58                             | 27,093      | 5,678                    | 4.9                                 | 5.5   | 84.1                                | 61                             | 29,011      | 10,623                   | 2.8                                 | 4.1   | 94.6                                |
| Piru.....                   | 75                             | 90,090      | 12,165                   | 6.7                                 | 9.1   | 89.6                                | 79                             | 88,788      | 13,253                   | 6.7                                 | 8.0   | 91.2                                |
| Rincon.....                 | 34                             | 423,853     | 5,052                    | 83.9                                | 31.2  | 82.1                                | 32                             | 382,878     | 4,293                    | 89.2                                | 31.0  | 73.1                                |
| Santa Paula.....            | 41                             | 21,769      | 5,373                    | 4.1                                 | 4.9   | 72.4                                | 45                             | 22,074      | 6,114                    | 3.6                                 | 4.2   | 73.8                                |

|                                   |       |            |         |       |       |       |       |            |         |       |       |      |
|-----------------------------------|-------|------------|---------|-------|-------|-------|-------|------------|---------|-------|-------|------|
| Sepe.....                         | 19    | 43,732     | 2,482   | 17.6  | 0.8   | 72.2  | 20    | 54,084     | 3,191   | 16.9  | 1.0   | 86.7 |
| Simi.....                         | 53    | 22,387     | 9,436   | 2.4   | 0.6   | 98.4  | 54    | 22,181     | 9,708   | 2.3   | 0.6   | 97.7 |
| South Mountain.....               | 75    | 324,126    | 9,802   | 33.1  | 1.1   | 72.2  | 79    | 399,432    | 12,518  | 3.9   | 0.8   | 86.1 |
| Ventura.....                      | 196   | 5,297,882  | 28,823  | 183.5 | 25.4  | 81.2  | 185   | 4,611,769  | 27,984  | 167.1 | 24.3  | 81.1 |
| Totals.....                       | 683   | 6,313,316  | 99,709  | 63.3  | 11.0  | 80.7  | 686   | 5,694,234  | 110,223 | 51.7  | 9.3   | 87.3 |
| <b>Dist. 3—Arroyo Grande.....</b> |       |            |         |       |       |       |       |            |         |       |       |      |
| Capitan.....                      | 12    | 21,443     | 1,952   | 11.0  | 8.3   | 89.9  | 15    | 19,241     | 2,163   | 8.9   | 11.6  | 78.4 |
| Casmalia.....                     | 7     | 72,493     | 775     | 93.5  | 24.8  | 61.2  | 10    | 121,721    | 1,238   | 98.3  | 8.1   | 67.3 |
| Cat Canyon.....                   | 9     | 45,982     | 1,116   | 41.2  | 32.6  | 68.5  | 10    | 37,890     | 1,116   | 33.3  | 4.3   | 90.7 |
| Elwood.....                       | 5     | 79,267     | 907     | 87.4  | 20.4  | 100.0 | 5     | 75,779     | 7,000   | 108.3 | 23.7  | 76.1 |
| La Galleta Gas.....               | 50    | 2,182,726  | 5,814   | 375.4 | 80.2  | 64.2  | 45    | 1,929,860  | 5,434   | 355.1 | 100.3 | 65.6 |
| Lompoc.....                       | 11    | 0          | 0       | 0     | 0     | 0     | 11    | 0          | 0       | 0     | 0     | 0    |
| Mesa.....                         | 4     | 0          | 0       | 0     | 0     | 0     | 4     | 0          | 0       | 0     | 0     | 0    |
| Sanita Maria.....                 | 1     | 15,860     | 136     | 116.6 | 54.3  | 75.1  | 4     | 34,481     | 458     | 73.3  | 67.9  | 62.2 |
| Sargent.....                      | 16    | 114,432    | 2,384   | 48.0  | 77.8  | 82.3  | 31    | 454,344    | 3,964   | 114.6 | 58.4  | 69.5 |
| Summerland.....                   | 144   | 716,275    | 20,073  | 35.7  | 35.3  | 77.0  | 145   | 745,784    | 21,065  | 35.4  | 38.3  | 79.0 |
| Santa Barbara County.....         | 8     | 4,363      | 1,344   | 3.2   | 0     | 92.8  | 8     | 4,284      | 1,267   | 3.4   | 0     | 86.1 |
| Totals.....                       | 19    | 10,541     | 2,722   | 3.9   | 12.4  | 79.2  | 19    | 9,637      | 3,201   | 3.0   | 9.6   | 91.6 |
| <b>Dist. 4—Belridge.....</b>      |       |            |         |       |       |       |       |            |         |       |       |      |
| Buttons Willow Gas.....           | 271   | 3,263,352  | 37,223  | 87.7  | 40.1  | 75.9  | 283   | 3,434,069  | 40,657  | 84.5  | 43.3  | 75.4 |
| Devils Den.....                   | 158   | 1,561,969  | 24,836  | 62.9  | 11.3  | 86.8  | 179   | 1,356,166  | 28,574  | 47.5  | 10.9  | 86.8 |
| Edison.....                       | 6     | 3,275      | 895     | 3.7   | 0.5   | 82.4  | 1     | 5,259      | 125     | 42.1  | 0     | 0    |
| Elk Hills.....                    | 3     | 31,278     | 330     | 94.8  | 2.2   | 60.8  | 7     | 129,265    | 754     | 171.4 | 5.7   | 67.9 |
| Elk Hills.....                    | 202   | 1,846,637  | 31,054  | 56.5  | 81.9  | 84.9  | 181   | 1,496,328  | 25,912  | 57.7  | 101.1 | 58.5 |
| Fruitvale.....                    | 64    | 686,341    | 9,150   | 75.0  | 8.9   | 79.0  | 67    | 674,508    | 9,139   | 73.8  | 9.3   | 77.8 |
| Kern River.....                   | 1,253 | 1,745,362  | 197,991 | 8.8   | 17.0  | 87.3  | 1,398 | 1,959,257  | 232,107 | 8.4   | 17.0  | 74.1 |
| Leet Hills.....                   | 304   | 619,621    | 33,134  | 18.7  | 26.7  | 60.2  | 335   | 834,015    | 51,192  | 16.3  | 36.4  | 90.2 |
| McKittrick.....                   | 205   | 549,478    | 31,834  | 17.3  | 95.8  | 85.8  | 200   | 547,625    | 34,641  | 15.8  | 95.9  | 83.0 |
| Temblor.....                      | 2,529 | 9,836,323  | 380,404 | 23.9  | 27.2  | 83.1  | 2,582 | 9,887,655  | 397,525 | 24.9  | 27.6  | 94.1 |
| Midway-Sunset.....                | 110   | 0          | 0       | 0     | 0     | 0     | 98    | 0          | 0       | 0     | 0     | 83.7 |
| Midway-Sunset.....                | 129   | 1,564,510  | 16,977  | 92.2  | 86.8  | 72.7  | 144   | 1,879,355  | 19,137  | 98.2  | 84.9  | 72.2 |
| Mountain View.....                | 12    | 901,504    | 1,966   | 458.5 | 1.9   | 90.5  | 38    | 1,701,366  | 5,773   | 294.7 | 5.1   | 82.6 |
| Peso Creek.....                   | 47    | 936,698    | 7,179   | 130.5 | 168.2 | 84.4  | 6     | 46,439     | 682     | 68.1  | 8.0   | 61.8 |
| Round Mountain.....               | 34    | 79,094     | 5,978   | 13.2  | 2.8   | 97.1  | 55    | 867,112    | 7,726   | 112.2 | 153.9 | 75.3 |
| Wheeler Ridge.....                | 0     | 0          | 0       | 0     | 0     | 0     | 0     | 0          | 0       | 0     | 0     | 98.0 |
| Kern County.....                  | 12    | 1,278      | 153     | 8.4   | 24.4  | 42.3  | 41    | 77,034     | 6,128   | 12.6  | 3.1   | 98.0 |
| Tulare County.....                | 4,948 | 20,363,388 | 741,881 | 27.4  | 31.4  | 82.8  | 5,229 | 21,461,921 | 819,507 | 26.2  | 31.7  | 85.2 |
| Totals.....                       |       |            |         |       |       |       |       |            |         |       |       |      |

TABLE G. Production Statistics and Operating Data of California Oil Fields—1934—Continued

| Field   | January 1 to June 30                      |             |                          |                                     |       | July 1 to December 31               |   |             |                          |                                     |       |                                     |
|---|---|-------------|--------------------------|-------------------------------------|-------|-------------------------------------|---|-------------|--------------------------|-------------------------------------|-------|-------------------------------------|
|   | Average number of producing wells— actual | Oil (bbls.) | Number of days producing | Production per well per day (bbls.) |       | Percent- age of time wells produced | Average number of producing wells— actual | Oil (bbls.) | Number of days producing | Production per well per day (bbls.) |       | Percent- age of time wells produced |
|   |   |             |                          | Oil                                 | Water |                                     |   |             |                          | Oil                                 | Water |                                     |
| Disr. 5—Coalinga.....   | 900                                       | 3,091,518   | 135,348                  | 22.8                                | 16.5  | 83.1                                | 960                                       | 3,516,143   | 153,883                  | 22.9                                | 15.2  | 87.1                                |
| Kettleman Middle Dome.....  | 1   | 53,331      | 176                      | 303.0                               | 96.5  | 97.2                                | 2   | 74,509      | 262                      | 284.4                               | 100.3 | 71.2                                |
| Kettleman North Dome.....   | 62  | 9,998,186   | 8,559                    | 1,168.1                             | 71.4  | 76.3                                | 79  | 11,267,457  | 10,314                   | 1,092.4                             | 78.7  | 71.0                                |
| Kings County: Dudley Ridge.....   | 21  | 0           | 0                        | 0                                   | 0     | 0                                   | 21  | 0           | 0                        | 0                                   | 0     | 0                                   |
| Totals.....   | 963                                       | 13,143,035  | 144,083                  | 91.2                                | 19.9  | 82.7                                | 1,041                                     | 14,858,109  | 164,439                  | 90.4                                | 19.3  | 85.8                                |
| Grand totals.....   | 11,215                                    | 85,967,384  | 1,698,376                | 50.6                                | 38.4  | 83.7                                | 11,673                                    | 88,752,802  | 1,842,556                | 48.2                                | 38.5  | 85.8                                |
| The exact production for some wells could not be obtained and the following estimates were incorporated in the above figures: |   |             |                          |                                     |       |                                     |   |             |                          |                                     |       |                                     |
| Disr. 1—Huntington Beach.....   |   |             |                          |                                     |       |                                     | 1   | 3,767       | 228                      |                                     |       |                                     |
| Long Beach.....   |   |             |                          |                                     |       |                                     | 5   | 26,590      | 747                      |                                     |       |                                     |

1 Two wells producing a total of 153 days.  
2 Gas wells omitted from totals.  
3 Estimated.  
4 Two wells producing a total of 92 days.

## CHAPTER THREE

## METALS

*Bibliography:* Reports of State Mineralogist I-XXXI (inc.). Bulletins 5, 6, 18, 23, 27, 36, 50, 57, 76, 78, 85, 92, 95, 108. Spurr and Wormser, "Marketing of Metals and Minerals." See also under each metal.

The total value of metals produced in California during 1934 was \$26,616,143. Chief among these is and always has been gold; followed by silver, quicksilver, tungsten ore, iron ore, copper, zinc, lead, platinum.

A comparison of the 1933 output with that of the 1934 output is afforded by the following table:

| Substance            | 1933              |              | 1934              |              | Increase +<br>Decrease—<br>Value |
|----------------------|-------------------|--------------|-------------------|--------------|----------------------------------|
|                      | Amount            | Value        | Amount            | Value        |                                  |
| Chromite.....        | *                 | *            | 294 tons          | \$3,498      | *—                               |
| Copper.....          | 997,511 lbs.      | \$63,521     | 590,638 lbs.      | 47,252       | <del>\$16,269</del>              |
| Gold.....            | 613,579 fine oss. | 15,683,075   | 719,084 fine oss. | 25,131,284   | 9,448,209+                       |
| Lead.....            | 772,463 lbs.      | 23,583       | 804,911 lbs.      | 29,782       | 1,199+                           |
| Platinum metals..... | 237 oss.          | 7,255        | 520 oss.          | 14,884       | 7,629+                           |
| Quicksilver.....     | 4,102 flasks      | 229,472      | 7,946 flasks      | 534,135      | 304,663+                         |
| Silver.....          | 402,591 fine oss. | 140,907      | 844,413 fine oss. | 545,883      | 404,976+                         |
| Tungsten.....        | 148 tons          | 76,605       | 261 tons          | 224,417      | 147,812+                         |
| Zinc.....            | 209,222 lbs.      | 12,189       | 721,719 lbs.      | 31,034       | 18,845+                          |
| Unapportioned.....   |                   | *14,710      |                   | 53,974       | 39,264+                          |
| Totals.....          |                   | \$16,256,317 |                   | \$26,616,143 |                                  |
| Net increase.....    |                   |              |                   |              | \$10,359,826+                    |

\* Included under 'Unapportioned.'

\* Includes chromite and molybdenum ore.

\* Includes iron ore, manganese ore, and molybdenum ore.

## ALUMINUM

*Bibliography:* Report XVIII, p. 198. Bulletins 38, 67. U. S. Geol. Surv., Min. Res. of U. S.

To date there has been no commercial production of aluminum ore in California. Only a single authenticated occurrence of bauxite has thus far been noted in this state, being in Riverside County, southeast of Corona, but as yet undeveloped.

## ANTIMONY

*Bibliography:* State Mineralogist Reports VIII, X, XII-XV (inc.), XVII, XXII, XXIII, XXV-XXVII (inc.). Bulletins 38, 91.

During 1934 there were no shipments of antimony ore in California. The principal commercial production of antimony in California has come from Kern, Inyo and San Benito counties, and other occurrences have been noted in Nevada, Riverside, San Bernardino and Santa Clara counties. The commonest occurrence is in the form of the sulphide,

stibnite; but in the Kernville and Havilah districts in Kern County there were notable deposits of the native metal, being among the few localities of the world where native antimony has been found.

Present New York quotations (Aug. 8, 1935) are around 12½¢ per pound for Chinese (duty paid) and American spot antimony.

#### Antimony Production in California, by Years.

The production of antimony ore in California by years since 1887 has been as follows:

| Year | Tons | Value    | Year   | Tons  | Value     |
|------|------|----------|--------|-------|-----------|
| 1887 | 75   | \$15,500 | 1902   |       |           |
| 1888 | 100  | 20,000   | 1915   | 510   | \$35,666  |
| 1889 |      |          | 1916   | 1,015 | 64,793    |
| 1893 | 50   | 2,250    | 1917   | 158   | 18,786    |
| 1894 | 150  | 6,000    | 1918   |       |           |
| 1895 | 33   | 1,485    | 1925)  | *26   | 770       |
| 1896 | 17   | 2,320    | 1926)  |       |           |
| 1897 | 20   | 3,500    | 1927   | 20    | 590       |
| 1898 | 40   | 1,200    | 1928   | 20    | 761       |
| 1899 | 75   | 13,500   | 1929   |       |           |
| 1900 | 70   | 5,700    |        |       |           |
| 1901 | 50   | 8,350    | Totals | 2,429 | \$201,171 |

\* Annual details concealed under 'Unapportioned.'

#### ARSENIC

*Bibliography:* Reports XVIII, XXIII, XXV, XXX. Bulletin 67. U. S. G. S., Min. Res. of U. S.

Arsenic is found in a number of localities in California in the mineral arsenopyrite ( $\text{FeAsS}$ ), which is frequently gold bearing; and in scorodite ( $\text{FeAsO}_4 + 2\text{H}_2\text{O}$ ), an oxidation product of arsenopyrite. The occurrence of realgar ( $\text{AsS}$ ) has also been noted.

Except for a small output in 1924, there has been no commercial recovery of arsenic from California ores. There having been only a single operator, the figures are concealed under the 'Unapportioned' item.

#### BERYLLIUM

*Bibliography:* State Mineralogist Report XXVII. Eng. & Min. Jour.-Press, Vol. 118, No. 8, p. 285, Aug. 23, 1924. U. S. Bureau of Mines Information Circular 6190.

Beryllium is a metal resembling aluminum closely in its chemical character. It has a specific gravity of 1.85, is almost as hard as quartz (will scratch glass) and will take a high polish. The use of beryllium as a metal is still more or less in the experimental stage because the cost of extracting the metal from its ores almost makes it prohibitive and the present sources of supply of the ore are limited. Not until such a time when deposits can be found that will assure a definite supply and metallurgical costs are such as to justify its use, will the metal be found in common use.

There are a number of beryllium minerals, but none have been found in commercial quantities, except beryl, which is a beryllium-aluminum silicate. The chief use at present for ground beryl is as an addition to porcelain products, where it reduces the coefficient of expansion. Beryllium metal is difficult to separate from aluminum.

Present (Aug. 1, 1935) quotations for beryllium ore are per ton in carload lots, minimum 10 per cent BeO \$30; minimum 12 per cent BeO, \$35, f.o.b. mine.

Beryl occurs in California in the pegmatite dikes of the tourmaline gem district in northern San Diego and southwestern Riverside counties; and an occurrence has recently been noted in western Inyo County, but the quantity is as yet unproved. Thus far there have been no commercial shipments of beryl from California except for gem purposes (the pink and aquamarine varieties).

### BISMUTH

*Bibliography:* Bulletins 38, 67, 91. Am. Jour. Sci., 1903, Vol. 16.

Several bismuth minerals have been found in California, notably native bismuth and bismite (the ochre) in the tourmaline gem district in San Diego and Riverside counties near Pala. Other occurrences of bismuth minerals, including the sulphide, bismuthinite, have been noted in Inyo, Fresno, Nevada, Tuolumne, San Bernardino, and Mono counties, but only in small quantities. The only commercial production recorded was 20 tons valued at \$2,400 in 1904, and credited to Riverside County.

Present quotations (Aug. 1, 1935) for bismuth are around 90¢ per pound, in ton lots for the refined metal.

### CADMIUM

*Bibliography:* U. S. Geol. Surv., Min. Res. of U. S., 1908, 1918.

During 1917 and 1918, cadmium metal was recovered by the electrolytic zinc plant of the Mammoth Copper Company in Shasta County. It was shipped in the form of 'sticks' and amounted to a total of several thousand pounds for the two years, the exact figures being concealed under 'Unapportioned.' That was the first, and thus far the only, commercial production of cadmium recorded from Californian ore. Cadmium occurs there associated with zinc sulphide, sphalerite. Cadmium also occurs in the Cerro Gordo Mines, Inyo County, associated with smithsonite (zinc carbonate).

Present quotations (Aug. 1, 1935) for cadmium are 65¢ per pound for the refined metal.

### CHROMITE

*Bibliography:* State Mineralogist Reports IV, XII, XIII, XIV, XV, XVII, XVIII, XXI-XXIX (inc.). Bulletins 38, 76, 91. Preliminary Report 3. U. S. G. S., Bull. 430. Min. & Sci. Press, Vol. 114, p. 552.

During the year 1934 there were shipments of chromite in California amounting to 294 short tons carrying 45% Cr<sub>2</sub>O<sub>3</sub>, worth \$3,498. The 1933 output was placed in the 'Unapportioned' item to conceal the production of either producer of that year. The 1933 shipments were the largest in volume since 1920.

**Occurrence.**

Chromite is widely distributed in California, the principal production, thus far, having come from El Dorado, San Luis Obispo, Del Norte, Shasta, Siskiyou, Placer, Fresno, and Tuolumne counties. In 1918 a total of 29 counties contributed to the State's output. There are two main belts in California yielding this mineral, one along the Coast Ranges from San Luis Obispo County to the Oregon line, including the Klamath Mountains at the north end, and the other in the Sierra Nevada from Tulare County to Plumas County. Chromite occurs as lenses in basic igneous rocks such as peridotite and pyroxenite, and in serpentines which have been derived by alteration of such basic rocks.

**Imports.**

Imports of foreign chromite <sup>1</sup> duty free, mainly from Rhodesia, New Caledonia and India, totaled 190,797 long tons valued at \$2,250,787 for the year 1934, compared with 116,511 tons worth \$1,426,450 in 1933.

**Total Chromite Production of California.**

Production of chromite in California began, apparently, about 1874, principally in San Luis Obispo County. There was considerable activity from 1880 to 1883, inclusive, and a total of 23,238 long tons (or 26,028 short tons), valued at \$329,924, was shipped from that county up to the beginning of 1887. Some ore also was shipped from the Tyson properties in Del Norte County. The tabulation herewith shows the output of chromite in California, annually, including the earliest figures so far as they are available. The figures from 1887 to date are from the records of the State Mining Bureau:

| Year                                    | Tons   | Value     | Year        | Tons    | Value       |
|---|--------|-----------|-------------|---------|-------------|
| 1874-1876 (San Luis Obispo County)..... | 26,028 | \$329,924 | 1911.....   | 935     | \$14,197    |
| 1887.....                               | 3,000  | 40,000    | 1912.....   | 1,270   | 11,260      |
| 1888.....                               | 1,500  | 20,000    | 1913.....   | 1,180   | 12,700      |
| 1889.....                               | 2,000  | 30,000    | 1914.....   | 1,517   | 9,434       |
| 1890.....                               | 3,599  | 53,985    | 1915.....   | 3,725   | 38,044      |
| 1891.....                               | 1,372  | 20,580    | 1916.....   | 48,943  | 717,244     |
| 1892.....                               | 1,500  | 22,500    | 1917.....   | 52,379  | 1,130,298   |
| 1893.....                               | 3,319  | 49,785    | 1918.....   | 73,955  | 3,649,497   |
| 1894.....                               | 3,680  | 39,980    | 1919.....   | *4,314  | 97,164      |
| 1895.....                               | 1,740  | 16,795    | 1920.....   | 1,770   | 43,031      |
| 1896.....                               | 786    | 7,775     | 1921.....   | 347     | 6,870       |
| 1897.....                               | -----  | -----     | 1922.....   | 379     | 6,334       |
| 1898.....                               | -----  | -----     | 1923.....   | 84      | 1,658       |
| 1899.....                               | -----  | -----     | 1924.....   | 350     | 6,700       |
| 1900.....                               | 140    | 1,400     | 1925.....   | 191     | 3,712       |
| 1901.....                               | 130    | 1,950     | 1926.....   | 393     | 7,063       |
| 1902.....                               | 315    | 4,725     | 1927.....   | 225     | 5,063       |
| 1903.....                               | 150    | 2,250     | 1928.....   | 729     | 15,179      |
| 1904.....                               | 123    | 1,845     | 1929.....   | 327     | 5,025       |
| 1905.....                               | 40     | 600       | 1930.....   | 84      | 1,905       |
| 1906.....                               | 317    | 2,859     | 1931.....   | 441     | 6,737       |
| 1907.....                               | 302    | 6,040     | 1932) *     | 1,206   | 16,587      |
| 1908.....                               | 350    | 6,195     | 1933) *     | 294     | 3,498       |
| 1909.....                               | 436    | 5,309     | 1934.....   | -----   | -----       |
| 1910.....                               | 749    | 9,707     | Totals..... | 246,616 | \$6,483,954 |

\* Recalculated to 45% Cr<sub>2</sub>O<sub>3</sub>, beginning with 1919.

\* Annual details concealed under 'Unapportioned.'

<sup>1</sup> Monthly Summary of Foreign Commerce of U. S. Bureau of Foreign and Domestic Commerce, Dec., 1934.



## COBALT

**Bibliography:** Report XIV. Bulletins 67, 91. U. S. G. S., Min. Res. of U. S., 1912, 1918. U. S. B. M., I. C. 6331.

Occurrences of some of the cobalt minerals have been noted in several localities in California, but to date no commercial production has resulted. Some of the copper ores of the foothill copper belt in Mariposa and Madera counties have been found to contain cobalt up to 3%.

The nominal quotation for cobalt is around \$2.50 per pound for the refined metal—35% for cash.

## COPPER

**Bibliography:** State Mineralogist Reports VIII-XXX (inc.). Bulletins 23, 50, 91.

The output of copper in California during 1934 amounted to a total of 590,638 pounds of recoverable metal valued at \$47,252. This was a decrease in both quantity and value as compared with the 1933 production which was 992,515 pounds worth \$63,521. The average price of copper in 1934 was 8.0¢ per pound compared with 6.4¢ in 1933; 6.3¢ in 1932; 9.1¢ in 1931; 13.0¢ in 1930; and 17.6¢ in 1929.

Copper was second to gold among the metals in California from 1896 to 1932, when it was passed in value of output by quicksilver and silver, and in 1933 also by tungsten.

The distribution of the 1934 output of copper in California by counties was as follows:

| <i>County</i>   | <i>Pounds</i>  | <i>Value</i>    |
|---|----------------|-----------------|
| Amador -----  | 7,254          | \$580           |
| Butte -----   | 1,805          | 144             |
| El Dorado -----   | 4,312          | 345             |
| Inyo -----  | 33,363         | 2,669           |
| Kern -----  | 5,502          | 440             |
| Mariposa -----  | 1,771          | 142             |
| Nevada -----  | 113,771        | 9,102           |
| Placer -----  | 1,953          | 156             |
| Riverside -----   | 1,606          | 128             |
| San Bernardino -----  | 25,606         | 2,048           |
| Shasta -----  | 388,775        | 31,102          |
| Alpine, Calaveras, Fresno, Imperial, Lassen, Los Angeles,<br>Modoc, Mono, Plumas, Sacramento, San Diego, Sierra,<br>Siskiyou, Trinity, Tulare, Yuba * | 4,920          | 396             |
| <b>Totals -----</b>   | <b>590,638</b> | <b>\$47,252</b> |

\* Combined to conceal the output of individual producers in each.

According to preliminary data issued by the U. S. Bureau of Mines <sup>1</sup> the smelter production of primary copper from domestic sources during 1934 amounted to 488,454,107 pounds, an increase of approximately 9 per cent compared with 1933 output. The value increased approximately 36 per cent in 1934. The average price of copper delivered during the year, as reported to the U. S. Bureau of Mines by selling agents, was 8.0¢ per pound.

#### Copper Production of California, by Years.

Although some mining of copper ores in a small way had been done earlier, shipments in appreciable quantities began in 1861 and continued of importance up to the end of 1867, when a total of 68,631 tons

<sup>1</sup> U. S. Bureau of Mines, Mineral Market Report, M. M. S. 347, May 28, 1935.

(of 2376 pounds) of high-grade ores, and 847 tons of matte or 'regulus'<sup>1</sup> had been shipped to smelters at New York, Boston, and Swansea, Wales. The most important district at that time was Copperopolis and vicinity in Calaveras County, with some shipments also made from Mariposa, El Dorado, Fresno and San Luis Obispo counties. From 1868 to 1882, the output was insignificant. There are wide discrepancies in the figures currently recorded for copper production previous to 1882, in which year the data of the U. S. Geological Survey began. The detailed statistics of the California State Mining Bureau began in the year 1894.

Amount and value of copper production in California annually since 1882 is given in the following tabulation:

Copper Production of California, by Years

| Year      | Pounds     | Value     | Year        | Pounds        | Value         |
|-----------|------------|-----------|-------------|---------------|---------------|
| 1882..... | 826,695    | \$144,672 | 1910.....   | 53,721,032    | \$6,680,641   |
| 1883..... | 1,600,862  | 265,743   | 1911.....   | 36,838,024    | 4,604,753     |
| 1884..... | 876,166    | 120,911   | 1912.....   | 34,169,997    | 5,638,049     |
| 1885..... | 469,028    | 49,248    | 1913.....   | 34,471,118    | 5,343,023     |
| 1886..... | 430,210    | 43,021    | 1914.....   | 30,491,535    | 4,055,375     |
| 1887..... | 1,600,000  | 192,000   | 1915.....   | 40,968,966    | 7,169,567     |
| 1888..... | 1,570,021  | 235,303   | 1916.....   | 55,809,019    | 13,729,017    |
| 1889..... | 151,505    | 18,180    | 1917.....   | 48,534,611    | 13,249,948    |
| 1890..... | 23,347     | 3,502     | 1918.....   | 47,793,046    | 11,805,883    |
| 1891..... | 3,397,405  | 424,675   | 1919.....   | 22,162,605    | 4,122,246     |
| 1892..... | 2,980,944  | 342,808   | 1920.....   | 12,947,299    | 2,382,303     |
| 1893..... | 239,682    | 21,571    | 1921.....   | 12,088,053    | 1,559,358     |
| 1894..... | 738,594    | 72,486    | 1922.....   | 22,883,987    | 3,090,582     |
| 1895..... | 225,650    | 21,901    | 1923.....   | 28,346,860    | 4,166,989     |
| 1896..... | 1,992,844  | 199,519   | 1924.....   | 52,089,349    | 6,823,704     |
| 1897..... | 13,638,626 | 1,540,666 | 1925.....   | 46,968,499    | 6,669,527     |
| 1898..... | 21,543,229 | 2,475,168 | 1926.....   | 33,521,544    | 4,693,014     |
| 1899..... | 23,915,486 | 3,990,534 | 1927.....   | 27,350,316    | 3,582,888     |
| 1900..... | 29,515,512 | 4,748,242 | 1928.....   | 25,162,304    | 3,623,360     |
| 1901..... | 34,931,788 | 5,501,782 | 1929.....   | 33,809,258    | 5,941,799     |
| 1902..... | 27,860,162 | 3,239,975 | 1930.....   | 26,534,752    | 3,449,522     |
| 1903..... | 19,113,861 | 2,520,997 | 1931.....   | 12,954,842    | 1,178,890     |
| 1904..... | 29,974,154 | 3,969,995 | 1932.....   | 1,417,856     | 89,307        |
| 1905..... | 16,997,489 | 2,650,605 | 1933.....   | 992,515       | 63,521        |
| 1906..... | 28,726,448 | 5,522,712 | 1934.....   | 590,638       | 47,252        |
| 1907..... | 32,602,945 | 6,341,387 |             |               |               |
| 1908..... | 40,868,772 | 5,350,777 |             |               |               |
| 1909..... | 65,727,736 | 8,478,142 |             |               |               |
|           |            |           | Totals..... | 1,145,156,866 | \$182,247,040 |

## GOLD

*Bibliography:* State Mineralogist Reports I to XXXI (inc.), (except III and VIII). Bulletins 36, 45, 57, 91, 92, 95, 108. U. S. Geol. Surv., Prof. Paper 73. U. S. Bur. of Mines, Econ. Paper 3 (1929).

Gold was first, and, for many years, the most important single mineral product of California. Although now surpassed for a number of years in annual value by petroleum, and by natural gas beginning with 1923 to 1932, it still heads our metal list, and California continues to outrank all the other gold-producing States of the United States, including Alaska. In fact, at present, California is producing approximately 24% of the gold mined in the entire United States.

There has been a steady increase in the development of both lode and placer mines in California during the last four or five years, brought about by the present economic conditions. During 1934 there were

<sup>1</sup> Brown, J. Ross, Mineral Resources West of the Rocky Mountains, p. 168, 1867.

O R E G O N

STATE OF CALIFORNIA  
DEPARTMENT OF NATURAL RESOURCES  
DIVISION OF MINES  
WALTER W. BRADLEY  
STATE MINERALOGIST

OUTLINE MAP  
OF  
**CALIFORNIA**  
SCALE  
SHOWING  
**GOLD PRODUCING DISTRICTS**  
1932 - 1934

SURROUNDING  
AND EVEN  
DISTANT COMMUNITIES  
BENEFIT FROM  
MINING ACTIVITY

P A C I F I C O C E A N

N E V A D A

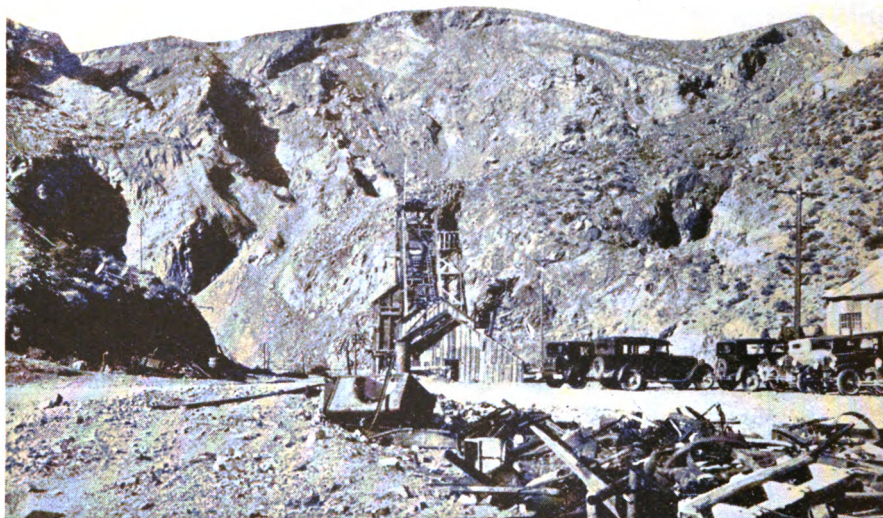
M E X I C O

ing the Reconstruction Finance Corporation to buy newly-mined gold at a price fixed by the U. S. Treasurer which corresponded to the world price, all of which had an effect on the 1933 gold yield. On January 30, 1934, the Gold Reserve Act of 1934 was passed, followed by the President's proclamation of January 31, 1934, which fixed the weight of the gold dollar at 15 5/21 grains, nine-tenths fine. The value of gold thereby became \$35 a fine ounce. The average weighted value of

gold per fine ounce in 1934 was \$34.95. The production of gold in California during 1934 totaled 719,083.92 fine ounces worth \$25,131,284, being an increase of 106,485.07 fine ounces over the 1933 yield. The deep or lode mines accounted for 445,039.09 fine ounces worth \$15,554,116, and the placers (mainly dredges) produced 274,024.83 fine ounces worth \$9,577,168.

As the Division of Mines has never independently gathered the statistics of gold and silver production, these figures, as in former years, are published by cooperation with and through the courtesy of F. W. Horton and H. M. Gaylord of the Division of Mineral Statistics, U. S. Bureau of Mines.

The largest production in 1934 was reported from Nevada County with an output of 203,678.13 fine ounces (\$7,116,551); Sacramento



Glory hole at the Rand level of the Yellow Aster Mine, at Randsburg, Kern County.

*Cut by courtesy of Engineering and Mining Journal.*

County second with 101,730.14 fine ounces (\$3,555,468); Amador County third with 65,072.24 fine ounces (\$2,274,275); Yuba County fourth with 54,705.58 fine ounces (\$1,911,960); followed in turn by El Dorado, Calaveras, Shasta, Kern counties each of which had a production exceeding a million dollars.

Nevada held the first place as a gold producing county with an output exceeding that of Yuba or Amador which held first and second places respectively in 1928 with Sacramento fourth that year. Sacramento held second place since 1931, its output exceeding that of Amador, which held second place in 1930. The gold from Yuba and Sacramento comes almost entirely from dredges, while that from Nevada and Amador counties comes mainly from the lode mines.

Distribution of the 1934 gold output by counties was as follows:

| County          | Number of operators <sup>a</sup> |        | Value        |
|-----------------|----------------------------------|--------|--------------|
|                 | Lode                             | Placer |              |
| Alpine          | 3                                | ---    | \$3,726      |
| Amador          | 44                               | 62     | 2,274,275    |
| Butte           | 23                               | 76     | 544,000      |
| Calaveras       | 46                               | 103    | 1,274,862    |
| Colusa          | 1                                | ---    | 477          |
| Del Norte       | 1                                | 9      | 8,078        |
| El Dorado       | 50                               | 88     | 1,380,710    |
| Fresno          | 8                                | 24     | 24,066       |
| Humboldt        | ---                              | 26     | 28,978       |
| Imperial        | 4                                | 11     | 9,973        |
| Inyo            | 57                               | 14     | 266,109      |
| Kern            | 122                              | 116    | 1,021,849    |
| Kings           | 2                                | ---    | 694          |
| Lassen          | 3                                | 1      | 14,689       |
| Los Angeles     | 9                                | 44     | 57,924       |
| Madera          | 9                                | 28     | 13,163       |
| Mariposa        | 51                               | 88     | 517,443      |
| Merced          | ---                              | 17     | 598,695      |
| Modoc           | 3                                | 1      | 6,323        |
| Mono            | 11                               | 2      | 56,092       |
| Monterey        | 1                                | 3      | 517          |
| Nevada          | 45                               | 115    | 7,118,551    |
| Orange          | ---                              | 4      | 572          |
| Placer          | 29                               | 103    | 547,892      |
| Plumas          | 15                               | 111    | 153,056      |
| Riverside       | 28                               | 15     | 41,899       |
| Sacramento      | 3                                | 24     | 3,555,468    |
| San Bernardino  | 87                               | 41     | 301,994      |
| San Diego       | 8                                | 10     | 25,514       |
| San Joaquin     | ---                              | 5      | 1,133        |
| San Luis Obispo | 1                                | 3      | 1,946        |
| Santa Cruz      | ---                              | 2      | 130          |
| Shasta          | 29                               | 62     | 718,583      |
| Sierra          | 29                               | 129    | 1,027,582    |
| Siskiyou        | 39                               | 130    | 528,395      |
| Stanislaus      | 1                                | 24     | 239,158      |
| Tehama          | ---                              | ---    | 1,146        |
| Trinity         | 27                               | 120    | 574,681      |
| Tulare          | 3                                | 3      | 5,114        |
| Tuolumne        | 59                               | 82     | 269,256      |
| Ventura         | 3                                | 4      | 4,435        |
| Yolo            | ---                              | 1      | 176          |
| Yuba            | 13                               | 83     | 1,911,960    |
| Totals          | 867                              | 1,784  | \$25,131,284 |

The following is quoted from the advance statement of gold in 1934 by courtesy of the U. S. Bureau of Mines,<sup>b</sup> Department of Commerce:

"Gold.—In 1934 California produced 719,063.92 fine ounces of gold, an increase of 105,485.07 ounces (17 per cent) over 1933, and maintained its position as the leading gold-producing State, exceeding both Alaska and South Dakota in output. The value of the gold produced was \$25,131,284 in 1934 compared with \$15,683,075 in 1933, an increase of \$9,448,209 (60 per cent). Approximately 62 per cent of the total gold in 1934 came from lode mines and 38 per cent from placers. Nevada and Sacramento counties each produced more than 100,000 ounces and were followed in order of output by Amador, Yuba, El Dorado, Calaveras, Sierra, and Kern counties, each with a yield of over 29,000 ounces; these eight counties produced 559,807 ounces (78 per cent) of the state total. The major increases in the state in county output were: Nevada County, 20,722 ounces (11 per cent); Calaveras, 19,146 ounces (110 per cent); El Dorado, 18,342 ounces (87 per cent); Kern, 12,634 ounces (76 per cent); Sierra, 11,988 ounces (69 per cent) and Yuba, 10,971 ounces (25 per cent). The only counties in which production dropped appreciably were: Sacramento, 15,510 ounces (13 per cent); Amador, 11,033 (14 per cent); and Shasta, 3629 (15 per cent). The five Mother Lode counties—Amador, Calaveras, El Dorado, Mariposa, and Tuolumne—contributed 163,564 ounces (23 per cent) of the State total.

"In 49 of the lode mines and 21 placers producing more than 1,000 ounces of gold each, 32 lodes and 14 placers each produced 1,000 to 5,000 ounces, 9 lodes and 4 placers 10,000 to 20,000 ounces, 2 lodes and 1 placer 20,000 to 50,000 ounces and 1 lode and 2 placers more than 50,000 ounces; these 70 mines produced 597,431 fine ounces of gold 388,921 ounces from lode mines and 208,510 ounces from placers and accounted for 83 per cent of the total State. In 1933 only 27 lode mines and 15 placers produced more than 1,000 ounces each; and their total yield of

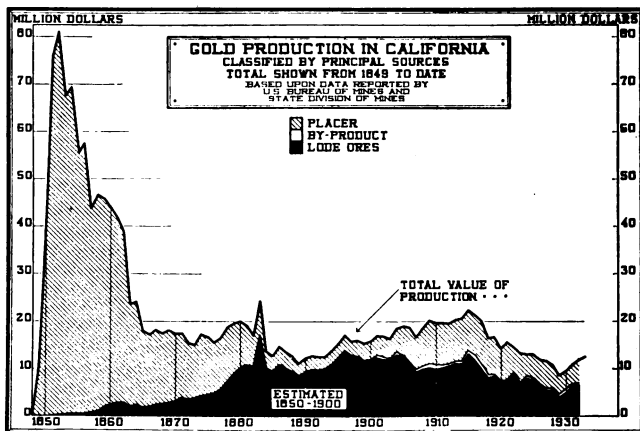
<sup>a</sup> Number does not include snipers, prospectors and various individuals selling small lots to bullion dealers.

<sup>b</sup> U. S. Bureau of Mines, Mineral Yearbook, 1934-35, pp. 149-151.

521,819 ounces 310,916 ounces from lode mines and 210,903 ounces from placers, accounted for 85 per cent of the State total.

"The yield of lode gold was 445,039 ounces in 1934 compared with 352,200 ounces in 1933, an increase of 92,839 ounces (26 per cent). The largest production was from Nevada County (195,059 ounces); next in order were Amador (59,218 ounces), El Dorado (32,958 ounces), Kern (28,294 ounces), and Sierra (26,143 ounces). The following 20 companies (or mines), virtually all old established operators produced 75 per cent of the total lode gold and 46.5 per cent of the total gold output of the State in 1934; listed in order of output, they were as follows: Empire Star Mines Co., Ltd. (Nevada County), Idaho-Maryland Mines Co. (Nevada County), The Argonaut Mining Co., Ltd. (Amador County), Carson Hill Gold Mining Corporation (Calaveras County), The Mountain Copper Co., Ltd. (Shasta County), Original Sixteen to One Mine, Inc. (Sierra County), Kennedy Mining & Milling Co. (Amador County), Montezuma Apex Mining Co. (El Dorado County), Central Eureka Mining Co. (Amador County), Central Tailings Co. (Amador County), Golden Center Mine (Nevada County), Beebe Gold Mining Co. (El Dorado County), Lava Cap Gold Mining Corporation (Nevada County), Pacific Mining Co. (Mariposa County), Spanish Mining Co. (Nevada County), Middle Fork Gold Mining Co. (El Dorado County), Silver Queen Mining Co. (Kern County), Kenton Mine (Sierra County), Cardinal Gold Mining Co. (Inyo County), and King Solomon Mines Co. (Siskiyou County). The continued increase in the average price of gold transformed much vein material too low in grade to be commercial ore heretofore into payable reserves which in many instances were increased further by active development work.

"Production of gold by dredging in 1934 totaled 194,051.48 fine ounces approximately 27 per cent of the total gold output of the State and 7,658.84 ounces (4 per cent) less than the dredge yield in 1933. The Natomas Co. with 6 dredges in the Folsom district (Sacramento County), the Yuba Consolidated Gold Fields



*Cut by courtesy of California State Chamber of Commerce.*

with 5 dredges in the Yuba River district (Yuba County), and 1 dredge in the Snelling district (Merced County), and the Capital Dredging Co. with 3 dredges in the Folsom district (Sacramento County) were the largest operators and produced over three fourths of the total dredge output. Each of the following companies or individuals, also listed in order of output, operated a single dredge: Snelling Gold Dredging Co., Snelling, Merced County; Gold Hill Dredging Co., Folsom City, Sacramento County; La Grange Gold Dredging Co., La Grange, Stanislaus County; Trinity Dredging Co., Lewiston, Trinity County; Lancha Plana Gold Dredging Co. in Amador County near Camanche; Oroville Gold Dredging Co., Oroville, Butte County; Gold Bar Dredging Co., Lewiston, Trinity County; Canyon Creek Dredge (J. E. Croudace, trustee), Georgetown, El Dorado County; Cal Oro Dredging Co., Yreka, Siskiyou County; Sierra Gold Dredging Co., Stanfield Hill property, Yuba County; Oro Bell Dredging Co., Loomis, Placer County; M. D. Baker, Igo, Shasta County; Lloyd B. Onyett Dredging Co., Palermo, Butte County; Allen Placers, Inc., Burson, Calaveras County; and Charles Staheli, Cottonwood, Shasta County. Altogether 18 companies and individuals operated 30 dredges and handled 59,260,208 cubic yards of gravel with an average recovery of 0.00327 ounce of fine gold per cubic yard. Although there was a slight decrease in 1934, in the quantity of gold produced by dredging the value of the output increased \$1,626,383 (31.5 per cent); 3 more companies and 5 more dredges were in operation than in 1933. The increase in price of gold notably extended the areas that may be dredged profitably, and at the close of the year several new dredges were being built and much ground was being prospected to determine its suitability for dredging.

"The output from drift placers was 12,992.78 fine ounces of gold (1.8 per cent of the State total gold) in 1934 compared with 16,981.08 ounces in 1933, a decrease of 3,988.30 ounces (23.5 per cent). The largest producing drift placers, in order of output, were: Calaveras Central 1 mile northeast of Angels Camp, Calaveras County; Vallecito Western 3 miles east of Angels Camp, Calaveras County; Lloyd



5 miles west of San Andreas, Calaveras County; Golden River near Angels Camp, Calaveras County; Golden Bear near Alleghany, Sierra County; and the Bunker Hill 14 miles northeast of La Porte, Plumas County. These 6 mines produced a total of 8,179.90 ounces of gold.

"Hydraulic mining yielded 9,281.75 fine ounces of gold (1.3 per cent of the State total gold) compared with 4,494.94 ounces in 1933, an increase of 4,786.81 ounces (106.5 per cent). It can be carried on successfully in California only in limited areas because of many restrictions as to tailings disposal. The leading producers of gold by hydraulicing were: You Bet mine, 13 miles east of Grass Valley, Nevada County; Red Hill mine 2 miles west of Junction City, Trinity County; Canyon placers on Canyon Creek near Dedrick, Trinity County; Paragon mine 2 miles northeast of Forest-hill, Placer County; and Omega mine 3 miles southeast of Washington, Nevada County. These 5 mines yielded a total of 5,467.65 ounces of gold.

"A total of 34,888 fine ounces of gold (5 per cent of the State total) can not be traced to individual properties but can be traced to the districts or counties from which it came. The major part of this gold was derived by itinerant miners; from small-scale placer operations; some was from pocket hunting and formed a part of that purchased by 136 bullion dealers in the State, including banks, merchants and private refiners licensed by the State Mineralogist of California under the Ore Buyers' License Act commonly known as the High-Grade Bill. Most of the placer gold purchased by licensed bullion buyers came from the following localities: Cosumnes River, El Dorado and Amador counties; Feather River and its tributaries, Butte and Plumas counties; Big Butte Creek, Butte County; Mokelumne River, Amador and Calaveras counties; Big Canyon and Webber Creeks, El Dorado County; Bull Creek, Mariposa County; Yuba River and Deer Creek, Nevada County; American River and its North and Middle Forks and Blue Canyon and Indian Creeks, Placer County; Black Hawk, Nelson, Rush, Sloat, Spanish, and Squirrel creeks, Plumas County; Klamath and Salmon rivers and their tributaries, Siskiyou County; Sacramento River and its tributaries (Beegum, Clear and Cottonwood creeks), and French Gulch, Shasta County; Trinity River and its tributaries, Trinity County; and Stanislaus and Tuolumne rivers and Woods Creek, Tuolumne County. Some of the gold purchased was recovered from beach sands in Humboldt, Monterey, and Santa Cruz counties, and small quantities were derived from San Gabriel and San Francisquito canyons, Los Angeles County."

#### Total Gold Production of California.

The presence of gold in stream gravels near Los Angeles was known and worked in a small way by the Indians, at least as early as 1841,<sup>1</sup> and possibly 1820.<sup>2</sup> On March 2, 1844, Don Manuel Castanares, deputy for California to the Congress of Mexico, reported<sup>3</sup> to his government that placers near Los Angeles had produced up to December, 1843, a total of 2000 ounces of gold dust, most of which had been sent to the United States Mint at Philadelphia.

As the padres and the rancheros discouraged the quest of gold, this early, small production caused no particular excitement. It was not until James W. Marshall's finding of gold nuggets in the tail-race of Sutter's saw mill on the American River, January 24, 1848, was heralded abroad that the great rush began, and California became a commonwealth of first rank almost over night. There are, however, no authentic data on gold production prior to 1848, other than occasional, scattered references such as above quoted.

The following table was originally compiled by Chas. G. Yale, of the Division of Mineral Resources, U. S. Geological Survey, but for a number of years statistician of the California State Mining Bureau and the U. S. Mint at San Francisco. The authorities chosen for certain periods were: J. D. Whitney, state geologist of California; John Arthur Phillips, author of "Mining and Metallurgy of Gold and Silver" (1867); U. S. Mining Commissioner R. W. Raymond; U. S. Mining Commissioner J. Ross Browne; Wm. P. Blake, Commissioner from California to the Paris Exposition, where he made a report on "Precious Metals" (1867); John J. Valentine, author for many years of the annual report on precious metals published by Wells, Fargo & Com-

<sup>1</sup> Hittell, T. H., *History of California*, Vol. II, p. 312, 1885.

<sup>2</sup> Bancroft, H. H., *History of California*, Vol. II, p. 417, 1886.

<sup>3</sup> *Mercantile Trust Review of the Pacific*, Vol. XIV, No. 2, p. 43, Feb. 15, 1925.

pany's Express; and Louis A. Garnett, in the early days manager of the San Francisco refinery, where records of gold receipts and shipments were kept. Mr. Yale obtained other data from the reports of the director of the U. S. Mint and the director of the U. S. Geological Survey. The authorities referred to who were alive at the time of the original compilation of this table in 1894 were all consulted in person or by letter by Mr. Yale with reference to the correctness of their published data, and the final table quoted was then made up.

The figures for 1903-1923 (inclusive) are those prepared by the U. S. Geological Survey; and since by the U. S. Bureau of Mines:

Total Gold Production of California

| Year      | Value      | Year             | Value           |
|-----------|------------|------------------|-----------------|
| 1848..... | \$245,301  | 1893.....        | \$12,538,780    |
| 1849..... | 10,151,360 | 1894.....        | 13,863,282      |
| 1850..... | 41,273,106 | 1895.....        | 15,334,317      |
| 1851..... | 75,938,232 | 1896.....        | 17,181,562      |
| 1852..... | 81,944,700 | 1897.....        | 15,871,401      |
| 1853..... | 67,613,487 | 1898.....        | 15,906,478      |
| 1854..... | 69,433,931 | 1899.....        | 15,336,031      |
| 1855..... | 55,485,395 | 1900.....        | 15,863,355      |
| 1856..... | 57,509,411 | 1901.....        | 16,989,044      |
| 1857..... | 43,628,172 | 1902.....        | 16,910,320      |
| 1858..... | 46,591,140 | 1903.....        | 16,300,653      |
| 1859..... | 45,846,599 | 1904.....        | 18,633,676      |
| 1860..... | 44,095,163 | 1905.....        | 18,898,545      |
| 1861..... | 41,884,995 | 1906.....        | 18,732,452      |
| 1862..... | 39,854,668 | 1907.....        | 16,727,928      |
| 1863..... | 23,501,736 | 1908.....        | 18,761,559      |
| 1864..... | 24,071,423 | 1909.....        | 20,237,870      |
| 1865..... | 17,930,858 | 1910.....        | 19,715,440      |
| 1866..... | 17,123,867 | 1911.....        | 19,738,908      |
| 1867..... | 18,265,452 | 1912.....        | 19,717,478      |
| 1868..... | 17,555,867 | 1913.....        | 20,406,558      |
| 1869..... | 18,229,044 | 1914.....        | 20,653,496      |
| 1870..... | 17,458,133 | 1915.....        | 22,442,296      |
| 1871..... | 17,477,885 | 1916.....        | 21,410,741      |
| 1872..... | 15,482,194 | 1917.....        | 20,087,504      |
| 1873..... | 15,019,210 | 1918.....        | 16,528,953      |
| 1874..... | 17,264,836 | 1919.....        | 16,695,955      |
| 1875..... | 16,876,009 | 1920.....        | 14,311,043      |
| 1876..... | 15,610,723 | 1921.....        | 15,704,822      |
| 1877..... | 16,501,268 | 1922.....        | 14,670,346      |
| 1878..... | 18,839,141 | 1923.....        | 13,379,013      |
| 1879..... | 19,626,654 | 1924.....        | 13,150,175      |
| 1880..... | 20,030,761 | 1925.....        | 13,065,330      |
| 1881..... | 19,223,155 | 1926.....        | 11,923,481      |
| 1882..... | 17,146,416 | 1927.....        | 11,671,018      |
| 1883..... | 24,316,873 | 1928.....        | 10,785,315      |
| 1884..... | 13,600,000 | 1929.....        | 8,526,703       |
| 1885..... | 12,661,044 | 1930.....        | 9,451,162       |
| 1886..... | 14,716,506 | 1931.....        | 10,814,162      |
| 1887..... | 13,588,614 | 1932.....        | 11,765,726      |
| 1888..... | 12,750,000 | 1933.....        | *15,683,075     |
| 1889..... | 11,212,913 | 1934.....        | b25,131,284     |
| 1890..... | 12,309,793 |                  |                 |
| 1891..... | 12,728,869 | Total value..... | \$1,905,050,441 |
| 1892..... | 12,571,900 |                  |                 |

\* Value calculated at an average weighted price of \$25.56 a fine ounce; previously \$20.6718.

b Value calculated at an average price of \$34.95 a fine ounce.



## IRIDIUM (see under Platinum)

## IRON ORE

*Bibliography:* State Mineralogist Reports II, IV, V, X, XII-XV (inc.), XVII, XVIII, XXI-XXVII (inc.), XXX. Bulletins 38, 67, 91. Am. Inst. Min. Eng., Trans. LIII. Min. & Sci. Press, Vol. 115, pp. 112, 117-122; Vol. 123, pp. 94-96, 113-114.

During 1934 there were shipments of iron ore from both San Bernardino and Santa Cruz counties. The material from the first county was hematite and used in the manufacture of high-iron cement, the latter produced a magnetite to be used in a heavy concrete for a counterbalance of a draw-bridge between Oakland and Alameda. The annual details are combined under the 'Unapportioned' item to conceal the output of either operator. There are considerable deposits of iron ore known in California, notably in Shasta, Madera, Placer, Riverside, San Bernardino, and Los Angeles counties, but production has so far been limited for lack of an economic supply of coking coal. Some pig iron has been made, utilizing charcoal for fuel, both in blast furnaces and by electrical reduction; also, ferrochrome, ferromanganese, and ferrosilicon have been made in California.

## Iron Ore Production in California, by Years.

Total iron ore production of California, with annual amounts and values, is as follows:

| Year      | Tons   | Value    | Year                    | Tons   | Value     |
|-----------|--------|----------|-------------------------|--------|-----------|
| 1881*     | 9,273  | \$79,452 | 1916.....               | 3,000  | \$6,000   |
| 1882..... | 2,073  | 17,766   | 1917.....               | 2,874  | 11,496    |
| 1883..... | 11,191 | 106,540  | 1918.....               | 3,108  | 15,947    |
| 1884..... | 4,532  | 40,983   | 1919.....               | 2,300  | 13,796    |
| 1885..... |        |          | 1920.....               | 5,975  | 40,889    |
| 1886..... | 3,676  | 19,250   | 1921.....               | 1,970  | 12,030    |
| 1887..... |        |          | 1922.....               | 3,588  | 18,868    |
| 1893..... | 250    | 2,000    | 1923.....               | 3,102  | 18,665    |
| 1894..... | 200    | 1,500    | 1924 <sup>a</sup> ..... | 785    | 4,710     |
| 1895..... |        |          | 1925 <sup>a</sup> ..... |        |           |
| 1907..... | 400    | 400      | 1926 <sup>a</sup> ..... | 5,272  | 26,000    |
| 1908..... |        |          | 1927 <sup>a</sup> ..... |        |           |
| 1909..... | 108    | 174      | 1928.....               |        |           |
| 1910..... | 579    | 900      | 1930.....               | 100    | 700       |
| 1911..... | 558    | 558      | 1931.....               |        |           |
| 1912..... | 2,508  | 2,508    | 1932.....               |        |           |
| 1913..... | 2,343  | 4,485    | 1934.....               | a      | a         |
| 1914..... | 1,436  | 5,128    |                         |        |           |
| 1915..... | 724    | 2,584    | Totals.....             | 71,905 | \$553,329 |

\* Productions for the years 1881-1886 (inc.) were reported as "tons of pig iron" (U.S.G.S., Min. Res. 1885), and for the table herewith are calculated to "tons of ore" on the basis of 47.6% Fe as shown by an average of analyses of the ores (State Mineralogist Report IV, p. 242). This early production of pig iron was from the blast furnaces then in operation at Hotelling in Placer County. Charcoal was used in lieu of coke. Though producing a superior grade of metal, they were obliged finally to close down, as they could not compete with the cheaper English and eastern United States iron brought in by sea to San Francisco.

<sup>a</sup> Annual details concealed under 'Unapportioned.'

## LEAD

*Bibliography:* State Mineralogist Reports IV, VIII-XV (inc.), XVII-XXVIII (inc.), XXX.

The production of lead in California during 1934 amounted to 804,911 pounds of recoverable metal valued at \$29,782, as compared with the 1933 figures of 772,463 pounds worth \$28,583. The average value of lead in 1934 was 3.7¢ per pound, compared with 3.7¢ per pound in 1933, 3.0¢ per pound in 1932, 3.7¢ per pound in 1931, and 5.0¢ per pound in 1930.

Distribution of the 1934 output by counties was as follows:

| County   | Pounds  | Value    |
|--|---------|----------|
| Alpine   | 1,564   | \$58     |
| Amador   | 6,012   | 223      |
| Inyo   | 530,037 | 19,611   |
| Kern   | 11,008  | 407      |
| Los Angeles  | 4,008   | 148      |
| Mono   | 7,487   | 277      |
| Nevada   | 130,301 | 4,821    |
| Plumas   | 2,960   | 110      |
| Riverside  | 1,207   | 45       |
| San Bernardino   | 103,497 | 3,829    |
| Sierra   | 2,104   | 78       |
| Tulare   | 2,697   | 100      |
| Butte, Calaveras, El Dorado, Mariposa, Placer, Sacramento,<br>Shasta, Siskiyou * | 2,029   | 75       |
| Totals   | 804,911 | \$29,782 |

\* Combined to conceal the output of individual operators in each.

#### Lead Production of the United States.

According to preliminary data issued by the U. S. Bureau of Mines<sup>1</sup> during 1934, the production of primary lead in the United States was 299,481 short tons, valued at \$22,188,000, being an increase over the national production of 1933 which was 259,616 short tons worth \$19,212,000.

#### Lead Production of California, by Years.

Statistics on lead production in California were first compiled by this Bureau in 1887. Amount and value of the output, annually, with total figures, to date, are given in the following table:

Lead Production in California, by Years

| Year | Pounds                 | Value     | Year   | Pounds      | Value        |
|------|------------------------|-----------|--------|-------------|--------------|
| 1877 | * 7,836,000            | \$391,800 | 1907   | 328,681     | \$16,690     |
| 1878 | 8,640,000              | 328,320   | 1908   | 1,124,483   | 46,663       |
| 1879 | 4,502,000              | 191,335   | 1909   | 2,685,477   | 144,897      |
| 1880 | 4,200,000              | 215,460   | 1910   | 3,016,902   | 134,082      |
| 1881 | 6,680,000              | 325,316   | 1911   | 1,403,839   | 63,173       |
| 1882 | <sup>b</sup> 4,000,000 | 196,800   | 1912   | 1,370,067   | 61,663       |
| 1883 | <sup>c</sup> 3,400,000 | 145,520   | 1913   | 3,640,951   | 160,202      |
| 1884 | 3,200,000              | 120,512   | 1914   | 4,697,400   | 183,198      |
| 1885 | 2,000,000              | 80,900    | 1915   | 4,796,299   | 225,426      |
| 1886 | 2,000,000              | 93,400    | 1916   | 12,392,031  | 855,049      |
| 1887 | <sup>d</sup> 1,160,000 | 52,200    | 1917   | 21,651,352  | 1,862,016    |
| 1888 | 900,000                | 38,250    | 1918   | 13,464,869  | 956,006      |
| 1889 | 940,000                | 35,720    | 1919   | 4,139,562   | 219,397      |
| 1890 | 800,000                | 36,000    | 1920   | 4,903,738   | 392,300      |
| 1891 | 1,140,000              | 49,020    | 1921   | 1,149,051   | 51,707       |
| 1892 | 1,360,000              | 54,400    | 1922   | 6,511,280   | 358,120      |
| 1893 | 666,000                | 24,975    | 1923   | 9,934,522   | 695,416      |
| 1894 | 950,000                | 28,500    | 1924   | 4,984,387   | 398,751      |
| 1895 | 1,592,400              | 49,364    | 1925   | 7,352,422   | 639,661      |
| 1896 | 1,293,500              | 38,805    | 1926   | 8,067,873   | 645,429      |
| 1897 | 596,000                | 20,264    | 1927   | 2,748,440   | 173,151      |
| 1898 | 655,000                | 23,907    | 1928   | 1,882,795   | 109,102      |
| 1899 | 721,000                | 30,642    | 1929   | 1,428,777   | 90,014       |
| 1900 | 1,040,000              | 41,600    | 1930   | 3,542,796   | 176,241      |
| 1901 | 720,500                | 28,820    | 1931   | 3,934,240   | 145,568      |
| 1902 | 349,440                | 12,230    | 1932   | 2,418,626   | 72,480       |
| 1903 | 110,000                | 3,960     | 1933   | 772,463     | 28,583       |
| 1904 | 124,000                | 5,270     | 1934   | 804,911     | 29,655       |
| 1905 | 533,680                | 25,083    |        |             |              |
| 1906 | 338,718                | 19,307    | Totals | 197,596,472 | \$11,642,310 |

\* Quantities for 1877-1881 (inc.) from C. E. Siebenthal, Mineral Resources of U. S. 1912, Part I, U. S. Geol. Survey, p. 339; and values for same years from quotations in Eng. & Min. Jour. of New York.

<sup>b</sup> Estimated.

<sup>c</sup> Quantities and values for 1883-1886 (inc.) from Mineral Resources of U. S. Geol. Survey, 1883-1886, respectively.

<sup>d</sup> Data from 1887 to date from reports of California State Mining Bureau.

<sup>1</sup> U. S. Bureau of Mines Mineral Market Report 359, April 16, 1935.

## MANGANESE

*Bibliography:* State Mineralogist Reports XII-XV (inc.), XVIII, XXII-XXVII (inc.), XXIX. Bulletins 38, 67, 76, 91. U. S. G. S. Bull. 427. Eng. & Min. Jour.-Press, Vol. 117, p. 545.

During 1934 there were shipments of manganese ore coming from Lake, Riverside and San Bernardino counties, this material being shipped to the steel mills in the state. The annual details are concealed under the 'Unapportioned' item as one operator made all the shipments.

Imports of foreign manganese ore into the United States<sup>1</sup> during 1934, mainly from Soviet Russia, Gold Coast, Cuba, and Brazil, amounted to 341,339 long tons of ore containing 165,840 long tons of manganese valued at \$3,529,182, as compared with 288,187 long tons of ore, containing 141,458 long tons of manganese, worth \$3,003,091.

The Tariff Act of 1930 provides for an import duty of 1¢ per pound on the metallic manganese contained, for "manganese ore (including ferruginous manganese ore) or concentrates containing in excess of 10 per centum of metallic manganese."

#### Manganese Ore Production in California, by Years.

Production of manganese ore in California began at the Ladd Mine, San Joaquin County, in the Tesla District in 1867. When shipments of this ore to England ceased late in 1874, upwards of 5000 tons had been produced by that property. For some years following that, the output was small. The tabulation herewith shows California's output of manganese ore, annually, since 1887, when the compilation of such figures was begun by the State Mining Bureau:

| Year      | Tons  | Value   | Year        | Tons   | Value       |
|-----------|-------|---------|-------------|--------|-------------|
| 1887..... | 1,000 | \$9,000 | 1912.....   | 22     | \$400       |
| 1888..... | 1,500 | 13,500  | 1913.....   |        |             |
| 1889..... | 53    | 901     | 1914.....   | 150    | 1,500       |
| 1890..... | 386   | 3,176   | 1915.....   | 4,013  | 49,098      |
| 1891..... | 705   | 3,830   | 1916.....   | 13,404 | 274,601     |
| 1892..... | 300   | 3,000   | 1917.....   | 15,515 | 396,659     |
| 1893..... | 270   | 4,050   | 1918.....   | 26,075 | 979,235     |
| 1894..... | 523   | 5,512   | 1919.....   | 11,569 | 451,422     |
| 1895..... | 880   | 8,200   | 1920.....   | 2,892  | 62,323      |
| 1896..... | 518   | 3,415   | 1921.....   | 1,005  | 12,210      |
| 1897..... | 504   | 4,080   | 1922.....   | 540    | 7,650       |
| 1898..... | 440   | 2,102   | 1923.....   | 690    | 10,620      |
| 1899..... | 295   | 3,165   | 1924.....   | 1,115  | 25,785      |
| 1900..... | 131   | 1,310   | 1925.....   | 832    | 19,450      |
| 1901..... | 425   | 4,405   | 1926.....   | 235    | 4,700       |
| 1902..... | 870   | 7,140   | 1927.....   |        |             |
| 1903..... | 1     | 25      | 1928.....   |        |             |
| 1904..... | 60    | 900     | 1929.....   | 733    | 8,216       |
| 1905..... |       |         | 1930.....   |        |             |
| 1906..... | 1     | 30      | 1931.....   | 207    | 2,576       |
| 1907..... | 1     | 25      | 1932.....   |        |             |
| 1908..... | 321   | 5,785   | 1934.....   |        |             |
| 1909..... | 3     | 75      |             |        |             |
| 1910..... | 265   | 4,235   | Totals..... | 88,451 | \$2,394,346 |
| 1911..... | 2     | 40      |             |        |             |

\* Annual details concealed under 'Unapportioned.'

<sup>1</sup> U. S. Bureau of Foreign and Domestic Commerce, Monthly Summary, Dec., 1934.

## MOLYBDENUM

*Bibliography:* State Mineralogist Reports XIV, XVII-XXIV (inc.), XXVI-XXVIII (inc.), XXX. Bulletins 67, 91. U. S. Bur. of Min., Bulletin 111. Proc. Colo. Sci. Soc., Vol. XI.

Molybdenum is used as an alloy constituent in the steel industry, and in certain forms of electrical apparatus. Included in the latter is its successful substitution for platinum and platinum-iridium in electric contact-making and -breaking devices. In alloys it is used similarly to and in conjunction with chromium, cobalt, iron, manganese, nickel, tungsten, and vanadium. The oxides and the ammonium salt have important chemical uses.

The two principal molybdenum minerals are: the sulphide, molybdenite, and wolfenite, lead molybdate; the former furnishing practically the entire commercial output. Molybdenite is found in or associated with acidic igneous rocks, such as granite and pegmatite.

Deposits of disseminated molybdenite are known in several localities in California, and in at least two places it occurs in small masses associated with copper sulphides. The first recorded commercial shipments of molybdenum ore in California were during the war 1916-1918. Some development work has been recently done on a high-grade deposit at the head of the Kaweah River, Tulare County.

The Tariff Act of 1930 provides for an import duty of 35 cents a pound for the metallic molybdenum content of molybdenum ores or concentrates.

The present (Aug. 1, 1935) quotations on molybdenum ores are 42¢ per pound of  $\text{MoS}_2$  contained, delivered at Pittsburgh, Pa., and on ferromolybdenum are 95¢ per pound Mo, 50%-60% Mo f.o.b. shipping point.

During 1933 and 1934 there were shipments of molybdenum concentrates in California amounting to 1432 pounds 91.23%  $\text{MoS}_2$  valued at \$306. The annual details are combined under the 'Unapportioned' item to conceal the output of either operator. The material shipped in 1933 came from Inyo County and had been mined for several years, and that shipped in 1934 came from Mono County and was mined in 1933.

## Molybdenum Production of California, by Years.

California's production of molybdenum ore by years is summarized in the following tabulation:

| Year             | Tons | Value    |
|------------------|------|----------|
| 1916             | 8    | \$9,945  |
| 1917             | 243  | 9,014    |
| 1918             | *    | 300      |
| 1919             |      |          |
| 1933 }<br>1934 } | b    | 306      |
| Totals           | 252  | \$19,565 |

\* 300 pounds of 90%  $\text{MoS}_2$  concentrate.

\* Annual details concealed under 'Unapportioned.'

\* 1432 pounds of 91.23%  $\text{MoS}_2$  concentrates.

## NICKEL

*Bibliography:* State Mineralogist Reports XIV, XVII, XXIV, XXV, XXVIII, XXX. U. S. G. S., Bulletin 640-D. U. S. Bureau of Standards, Circular 100.

Nickel occurs in the Friday Copper Mine in the Julian District, San Diego County. The ore is a nickel-bearing pyrrhotite, with some associated chalcopyrite. Some ore has been mined in the course of development work but not treated nor disposed of, as they were unable to get any smelter to handle it for them. Nickel ore has also been reported from other localities in California, but not yet confirmed.

Present (Aug. 1, 1935) quotations for nickel are around 35¢-36¢ per pound for the refined metal.

**OSMIUM** (see under Platinum)

**PALLADIUM** (see under Platinum)

## PLATINUM

*Bibliography:* State Mineralogist Reports IV, VIII, IX, XII-XXVI (inc.), XXVIII, XXX. Bulletins 38, 45, 67, 85, 91, 92. U. S. Geol. Surv., Bulletins 193, 285. Trans. Am. Inst. Min. Eng., Vol. 47, pp. 217-218.

In California the platinum group metals are obtained as a by-product from placer operations for gold. The major portion of it comes from the dredges working in Amador, Butte, Sacramento, Stanislaus, Shasta and Yuba counties, with a small amount coming from the hydraulic and surface-sluicing mines of Del Norte, Humboldt, Siskiyou and Trinity counties.

The production of platinum-group metals in California during 1934, amounted to 520 ounces crude containing 424 fine ounces worth \$14,884 (some of the above material was mined before 1934 but not sold until then). Compared with 236 fine ounces valued at \$7,255 in 1933. This metal came from properties in Del Norte, Merced, Sacramento, Shasta, Stanislaus, Trinity, and Yuba counties. Of the 424 fine ounces, 302 fine ounces were platinum, 45 fine ounces were iridium, 50 fine ounces were osmium, 25 fine ounces were ruthenium, and 2 fine ounces were palladium.

**Prices.**

The average prices during 1934 for the various platinum group metals per fine ounce, according to refiners' reports, as given by the U. S. Bureau of Mines<sup>1</sup> were: platinum, \$34.50; palladium, \$22.54; iridium, \$54.74; osmium, \$63; rhodium, \$41.10; and ruthenium, \$37.40, compared with the 1933 prices, which were: platinum \$30.75; palladium, \$18.30; iridium, \$54.30; osmium, \$56; rhodium, \$43.50 and ruthenium, \$41.75.

<sup>1</sup> U. S. Bureau of Mines, Mineral Market Report 379, August 14, 1935.

## Platinum Production of California, by Years.

The annual production and values since 1887 have been as follows:

| Year | Ounces | Value    | Year   | Ounces | Value     |
|------|--------|----------|--------|--------|-----------|
| 1887 | 416    | \$10,400 | 1912   | 603    | \$19,731  |
| 1888 | 100    | 400      | 1913   | 368    | 17,738    |
| 1889 | 500    | 2,000    | 1914   | 463    | 14,816    |
| 1890 | 500    | 2,000    | 1915   | 667    | 21,149    |
| 1891 | 600    | 2,500    | 1916   | 886    | 42,642    |
| 1892 | 100    | 500      | 1917   | 610    | 43,719    |
| 1893 | 80     | 440      | 1918   | 571    | 42,788    |
| 1894 | 75     | 517      | 1919   | *418   | 60,611    |
| 1895 | 100    | 600      | 1920   | 477    | 68,977    |
| 1896 | 150    | 900      | 1921   | 613    | 58,754    |
| 1897 | 162    | 944      | 1922   | 795    | 90,288    |
| 1898 | 150    | 900      | 1923   | 602    | 78,546    |
| 1899 | 300    | 1,800    | 1924   | 273    | 36,452    |
| 1900 | 300    | 1,800    | 1925   | 292    | 39,937    |
| 1901 | 400    | 2,500    | 1926   | 322    | 32,005    |
| 1902 | 250    | 3,200    | 1927   | 139    | 10,749    |
| 1903 | 39     | 468      | 1928   | 312    | 27,902    |
| 1904 | 70     | 1,052    | 1929   | 212    | 14,416    |
| 1905 | 123    | 1,849    | 1930   | 217    | 11,700    |
| 1906 | 200    | 3,320    | 1931   | 305    | 11,979    |
| 1907 | 91     | 1,647    | 1932   | 278    | 8,142     |
| 1908 | 300    | 6,255    | 1933   | 236    | 7,255     |
| 1909 | 706    | 13,414   | 1934   | 424    | 14,884    |
| 1910 | 337    | 8,386    |        |        |           |
| 1911 | 511    | 14,873   | Totals | 16,637 | \$857,845 |

\* Fine ounces, beginning with 1919.

## QUICKSILVER

*Bibliography:* State Mineralogist Reports IV, V, XII-XV, XVII-XXIX (inc.), XXXI. Bulletins 27, 78, 91. U. S. Geol. Surv., Monograph XIII. U. S. Bur. of Mines, Tech. Papers 96, 227; Bulletin 222, 335.

The production of quicksilver in California during 1934 was 7946 flasks valued at \$534,135. This was an increase in both quantity and value over the 1933 figures which were 4102 flasks worth \$229,472. The distribution of the 1934 output by counties was as follows:

| County  | Flasks | Value     |
|---|--------|-----------|
| Fresno  | 17     | \$1,208   |
| Lake  | 3,497  | 221,837   |
| Napa  | 1,706  | 120,372   |
| San Benito  | 746    | 52,699    |
| San Luis Obispo                                     | 1,302  | 91,677    |
| Santa Clara   | 39     | 2,813     |
| Sonoma  | 393    | 27,228    |
| Colusa, Kern, Kings, Monterey, Trinity <sup>a</sup> | 246    | 16,301    |
| Totals  | 7,946  | \$534,135 |

<sup>a</sup> Combined to conceal the output of individual operators in each.

## Prices.

During 1934 the average for New York monthly quotations<sup>1</sup> was \$73.865 per 76 pound flasks. The average price for January was \$67.54 raising to \$75.93 for April and ending the year at \$73.00. The average amount received by producers in California during 1934 was \$67.22 per 76 pound flasks, compared with \$55.94 per flask in 1933.

The U. S. Bureau of Mines<sup>2</sup> reported the total production of the United States for 1934 at 15,445 flasks valued at \$1,140,845. California was by a considerable margin the largest producing state with

<sup>1</sup> Engineering & Mining Journal Vol. 134, 1934.

<sup>2</sup> U. S. Bureau of Mines Mineral Market Rept. 372, May 17, 1935.



approximately 51 per cent of the total, other producing states being Oregon, Texas, Arkansas, Washington, Nevada, and Utah. The national production for 1933 was 9669 flasks worth \$572,666. During 1934 imports of quicksilver amounted to 10,192 flasks worth \$752,832, of which 69 per cent came from Spain, 24 per cent from Mexico, and the remainder from Italy and Sweden. The 1934 imports showed a decrease from those of 1933, which were 22,555 flasks worth \$778,007.



Furnace and condenser plant of Santa Ynez Mercury Company,  
near Santa Ynez, Santa Barbara County.

*Photo by Walter W. Bradley.*

**Total Quicksilver Production of California.**

Total amount and value of the quicksilver production of California, as given in available records, are shown in the following tabulation.

4—24511

Though the New Almaden Mine in Santa Clara County was first worked in 1824, and has been in practically continuous operation since 1846 (the yield being small the first two years), there are no available data on the output earlier than 1850. Previous to June, 1904, a 'flask' of quicksilver contained  $76\frac{1}{2}$  pounds; then 75 pounds upto and including 1927; beginning with 1928, 76 pounds. In compiling this table the following sources of information were used: for 1850-1883, table by J. B. Randol, in Report of State Mineralogist IV, p. 336; 1883-1893, U. S. Geological Survey reports; 1894 to date, statistical bulletins of the State Mining Bureau; also State Mining Bureau, Bulletin 27, "Quicksilver Resources of California," 1908, p. 10.

| Year | Flasks | Value     | Average price per flask | Year   | Flasks    | Value         | Average price per flask |
|------|--------|-----------|-------------------------|--------|-----------|---------------|-------------------------|
| 1850 | 7,723  | \$768,052 | \$99 45                 | 1894   | 30,416    | \$934,000     | \$30 70                 |
| 1851 | 27,779 | 1,859,248 | 66 93                   | 1895   | 36,104    | 1,337,131     | 37 04                   |
| 1852 | 20,000 | 1,166,600 | 58 33                   | 1896   | 30,765    | 1,075,449     | 34 96                   |
| 1853 | 22,284 | 1,235,648 | 55 45                   | 1897   | 26,691    | 993,445       | 37 28                   |
| 1854 | 30,004 | 1,663,722 | 55 45                   | 1898   | 31,092    | 1,188,626     | 38 23                   |
| 1855 | 33,000 | 1,767,150 | 53 55                   | 1899   | 29,454    | 1,405,045     | 47 70                   |
| 1856 | 30,000 | 1,549,500 | 51 65                   | 1900   | 26,317    | 1,182,786     | 44 94                   |
| 1857 | 28,204 | 1,374,381 | 48 73                   | 1901   | 26,720    | 1,285,014     | 48 46                   |
| 1858 | 31,000 | 1,482,730 | 47 83                   | 1902   | 29,552    | 1,276,524     | 43 20                   |
| 1859 | 13,000 | 820,690   | 63 13                   | 1903   | 32,094    | 1,335,954     | 42 25                   |
| 1860 | 10,000 | 535,500   | 53 55                   | 1904   | 28,876    | 1,086,323     | 37 62                   |
| 1861 | 35,000 | 1,471,750 | 42 05                   | 1905   | 24,655    | 886,081       | 35 94                   |
| 1862 | 42,000 | 1,526,700 | 36 35                   | 1906   | 19,516    | 712,334       | 36 50                   |
| 1863 | 40,531 | 1,705,544 | 42 08                   | 1907   | 17,379    | 663,178       | 38 16                   |
| 1864 | 47,489 | 2,179,745 | 45 90                   | 1908   | 17,039    | 763,520       | 42 33                   |
| 1865 | 53,000 | 2,432,700 | 45 90                   | 1909   | 16,217    | 773,788       | 47 71                   |
| 1866 | 46,550 | 2,473,202 | 53 13                   | 1910   | 17,665    | 799,002       | 45 23                   |
| 1867 | 47,000 | 2,157,300 | 45 90                   | 1911   | 19,109    | 879,205       | 46 01                   |
| 1868 | 47,728 | 2,190,715 | 45 90                   | 1912   | 20,600    | 866,024       | 42 04                   |
| 1869 | 33,811 | 1,551,925 | 45 90                   | 1913   | 15,661    | 630,042       | 40 23                   |
| 1870 | 30,077 | 1,725,818 | 57 38                   | 1914   | 11,373    | 557,846       | 49 05                   |
| 1871 | 31,686 | 1,999,387 | 63 10                   | 1915   | 14,199    | 1,157,449     | 81 52                   |
| 1872 | 31,621 | 2,084,773 | 65 93                   | 1916   | 21,427    | 2,003,425     | 93 50                   |
| 1873 | 27,642 | 2,220,482 | 80 33                   | 1917   | 24,382    | 2,396,466     | 98 29                   |
| 1874 | 27,756 | 2,919,376 | 105 18                  | 1918   | 22,621    | 2,579,472     | 114 03                  |
| 1875 | 50,250 | 4,228,538 | 84 15                   | 1919   | 15,200    | 1,353,381     | 89 04                   |
| 1876 | 75,074 | 3,303,256 | 44 00                   | 1920   | 10,278    | 775,527       | 75 45                   |
| 1877 | 79,396 | 2,961,471 | 37 30                   | 1921   | 3,157     | 140,666       | 44 56                   |
| 1878 | 63,880 | 2,101,652 | 32 90                   | 1922   | 3,466     | 191,851       | 55 35                   |
| 1879 | 73,684 | 2,194,674 | 29 85                   | 1923   | 5,458     | 332,851       | 60 98                   |
| 1880 | 59,926 | 1,857,706 | 31 00                   | 1924   | 7,948     | 543,080       | 68 33                   |
| 1881 | 60,851 | 1,815,185 | 29 83                   | 1925   | 7,683     | 621,831       | 80 81                   |
| 1882 | 52,732 | 1,488,624 | 28 23                   | 1926   | 5,892     | 516,382       | 87 64                   |
| 1883 | 46,725 | 1,343,344 | 28 75                   | 1927   | 6,488     | 714,118       | 111 67                  |
| 1884 | 31,913 | 973,347   | 30 50                   | 1928   | 7,107     | 844,649       | 118 84                  |
| 1885 | 32,073 | 986,245   | 30 75                   | 1929   | 10,152    | 1,195,705     | 117 78                  |
| 1886 | 29,981 | 1,064,326 | 35 50                   | 1930   | 11,374    | 1,255,257     | 110 36                  |
| 1887 | 33,760 | 1,430,749 | 42 38                   | 1931   | 13,478    | 1,121,624     | 83 22                   |
| 1888 | 33,250 | 1,413,125 | 42 50                   | 1932   | 5,349     | 279,780       | 52 30                   |
| 1889 | 26,464 | 1,190,880 | 45 00                   | 1933   | 4,102     | 229,472       | 55 94                   |
| 1890 | 22,926 | 1,203,615 | 52 50                   | 1934   | 7,946     | 534,135       | 67 22                   |
| 1891 | 22,904 | 1,036,406 | 45 25                   |        |           |               |                         |
| 1892 | 27,993 | 1,139,595 | 40 71                   | Totals | 2,785,427 | \$115,222,544 |                         |
| 1893 | 30,164 | 1,108,527 | 36 75                   |        |           |               |                         |

<sup>a</sup> Flasks of 75 lbs. since June, 1904; of  $76\frac{1}{2}$  lbs. previously.

<sup>b</sup> Flasks of 76 pounds, from January, 1928.

## SILVER

*Bibliography:* State Mineralogist Reports IV, VIII, XII-XXXI (inc.). Bulletins 67, 91, 108. Min. & Sci. Press, March 1, 1919.

The 1934 silver output in California totaled 844,413 fine ounces valued at \$545,883, being an increase in both amount and value over the figures of the previous year which were 402, 591 fine ounces worth



\$140,907. Of the 1934 yield there were 23,248 fine ounces worth \$15,029 from placers. The average price of domestic silver was 64.6¢ per fine ounce in 1934, compared with 35.0¢ per ounce in 1933, 28.2¢ per ounce in 1932 and 29.0¢ per ounce in 1931.

Distribution of the 1934 silver production by counties was as follows:

| <i>County</i>   | <i>Fine ounces</i> | <i>Value</i>     |
|-----------------|--------------------|------------------|
| Alpine          | 3,668              | \$2,371          |
| Amador          | 16,311             | 10,544           |
| Butte           | 4,907              | 3,172            |
| Calaveras       | 10,661             | 7,021            |
| Colusa          | 5                  | 3                |
| Del Norte       | 20                 | 13               |
| El Dorado       | 9,335              | 6,035            |
| Fresno          | 135                | 87               |
| Humboldt        | 124                | 80               |
| Imperial        | 110                | 71               |
| Inyo            | 40,130             | 25,943           |
| Kern            | 113,646            | 73,468           |
| Kings           | 4                  | 3                |
| Lassen          | 430                | 278              |
| Los Angeles     | 827                | 535              |
| Madera          | 107                | 69               |
| Mariposa        | 4,971              | 3,214            |
| Merced          | 1,625              | 1,051            |
| Modoc           | 103                | 67               |
| Mono            | 31,255             | 20,205           |
| Monterey        | 1                  | 1                |
| Nevada          | 314,509            | 203,190          |
| Orange          | 2                  | 1                |
| Placer          | 10,808             | 6,987            |
| Plumas          | 1,111              | 718              |
| Riverside       | 664                | 429              |
| Sacramento      | 4,548              | 2,940            |
| San Bernardino  | 228,314            | 147,597          |
| San Diego       | 289                | 187              |
| San Joaquin     | 3                  | 2                |
| San Luis Obispo | 8                  | 5                |
| Santa Cruz      | 2                  | 1                |
| Shasta          | 26,012             | 16,816           |
| Sierra          | 7,032              | 4,546            |
| Siskiyou        | 2,879              | 1,861            |
| Stanislaus      | 841                | 544              |
| Tehama          | 3                  | 2                |
| Trinity         | 2,537              | 1,640            |
| Tulare          | 145                | 94               |
| Tuolumne        | 1,775              | 1,147            |
| Ventura         | 10                 | 6                |
| Yolo            | 1                  | 1                |
| Yuba            | 4,545              | 2,938            |
| <b>Totals</b>   | <b>844,413</b>     | <b>\$545,883</b> |

The following paragraph is quoted from the U. S. Bureau of Mines, chapter on Gold and Silver from Mineral Year Book 1934-1935 by courtesy of F. W. Horton and H. M. Gaylord:

"*Silver*.—The output of silver from California mines was 844,413 fine ounces valued at \$545,883 in 1934 compared with 402,591 ounces valued at \$140,907 in 1933, an increase of 110 per cent in quantity and 287 per cent in value; the average price was 64.61 cents per ounce in 1934 compared with 35 cents in 1933. Lode mines yielded 821,165 ounces (97 per cent) of the total silver in 1934; placers yielded 23,248 ounces, of which dredges recovered 12,386 ounces.

"Nevada County with a production of 314,309 ounces, largely from gold ore mined in the Grass Valley-Nevada City district, ranked first in output. San Bernardino County with 228,314 ounces, mostly from gold-silver ore from the Kelly mine in the Randsburg district, ranked second; Kern County with 113,646 ounces, more than half of which came from gold ore from the recently discovered Silver Queen mine at Mojave, ranked third; Inyo and Mono Counties with 40,130 and 31,255 ounces, respectively, ranked fourth and fifth; lead ore from the Estelle and the Santa Rosa mines in the Cerro Gordo district was the principal source of silver in Inyo County, and silver ore from the Silverado mine yielded almost all the silver produced in Mono County. These five counties produced 727,654 ounces (86 per cent) of the state total. Of the state total lode silver, 542,071 ounces (66 per cent) came from gold ore, etc., 180,287 ounces (22 per cent) from gold-silver ore, 47,276 ounces (5.3 per cent) from silver ore, 49,729 ounces (6 per cent) from lead ore, and 1,802 ounces (0.2 per cent) from copper and copper-lead ores."

Silver Production of California, by Years.

The amount and value of the silver production of California, and the average price, annually, since 1880 are given in the table following. In the table shown in the statistical bulletins previous to Bulletin 97 (for 1925), the values shown for 1880-1904 (inc.) were taken from the reports of the Director of the Mint, of which the figures for 1880-1896 (inc.) were based on 'coinage value' (\$1.2929 per fine ounce). We have recalculated these to commercial value, using the price table of the U. S. Geological Survey (McCaskey, H. D.), Gold and Silver, 1913: Mineral Resources of the U. S., Part I, p. 847). From 1905 to date, the figures are those of the U. S. Geological Survey and its successors, the U. S. Bureau of Mines. Figures for the years prior to 1880 are not available, as there were no reliable records compiled.

Silver Production of California, by Years, Since 1880

| Year | Fine os.  | Value       | Average price per os. | Year   | Fine os.   | Value        | Average price per os. |
|------|-----------|-------------|-----------------------|--------|------------|--------------|-----------------------|
| 1880 | 882,169   | \$1,014,494 | \$1 15                | 1909   | 2,098,253  | \$1,091,092  | \$0 52                |
| 1881 | 580,091   | 655,503     | 1 13                  | 1910   | 1,840,085  | 993,646      | 54                    |
| 1882 | 653,569   | 745,089     | 1 14                  | 1911   | 1,270,445  | 673,336      | 53                    |
| 1883 | 1,129,244 | 1,253,541   | 1 11                  | 1912   | 1,300,136  | 799,584      | 615                   |
| 1884 | 3,236,987 | 3,593,056   | 1 11                  | 1913   | 1,378,399  | 832,553      | 604                   |
| 1885 | 1,986,260 | 2,125,298   | 1 07                  | 1914   | 1,471,859  | 813,938      | 553                   |
| 1886 | 1,245,747 | 1,233,290   | 0 99                  | 1915   | 1,678,756  | 851,129      | 507                   |
| 1887 | 1,262,282 | 1,237,036   | 0 98                  | 1916   | 2,564,354  | 1,887,345    | 658                   |
| 1888 | 1,314,874 | 1,235,982   | 0 94                  | 1917   | 1,775,431  | 1,462,955    | 824                   |
| 1889 | 820,947   | 774,510     | 0 94                  | 1918   | 1,427,711  | 1,427,711    | 1 00                  |
| 1890 | 820,336   | 861,352     | 1 05                  | 1919   | 1,107,189  | 1,240,051    | 1 12                  |
| 1891 | 737,224   | 729,852     | 0 99                  | 1920   | 1,706,327  | 1,359,896    | 1 09                  |
| 1892 | 358,575   | 311,960     | 87                    | 1921   | 3,629,223  | 3,629,223    | 1 00                  |
| 1893 | 415,468   | 324,065     | 78                    | 1922   | 3,100,065  | 3,100,065    | 1 00                  |
| 1894 | 229,896   | 144,834     | 63                    | 1923   | 3,559,443  | 2,918,743    | 82                    |
| 1895 | 463,911   | 501,542     | 65                    | 1924   | 3,555,133  | 2,381,952    | 67                    |
| 1896 | 328,757   | 222,195     | 68                    | 1925   | 3,054,416  | 2,119,765    | 694                   |
| 1897 | 754,648   | 452,789     | 60                    | 1926   | 2,022,460  | 1,262,015    | 624                   |
| 1898 | 701,788   | 414,055     | 59                    | 1927   | 1,620,242  | 818,677      | 567                   |
| 1899 | 855,869   | 513,521     | 60                    | 1928   | 1,478,771  | 865,081      | 585                   |
| 1900 | 1,168,157 | 724,257     | 62                    | 1929   | 1,176,895  | 627,285      | 533                   |
| 1901 | 950,831   | 570,499     | 60                    | 1930   | 1,622,803  | 624,779      | 385                   |
| 1902 | 1,163,041 | 616,412     | 53                    | 1931   | 867,818    | 251,667      | 290                   |
| 1903 | 958,230   | 517,444     | 54                    | 1932   | 493,533    | 139,176      | 282                   |
| 1904 | 1,441,259 | 835,929     | 58                    | 1933   | 402,591    | 140,907      | 350                   |
| 1905 | 1,076,174 | 650,009     | 61                    | 1934   | 844,413    | 545,883      | 644                   |
| 1906 | 1,220,641 | 817,830     | 68                    |        |            |              |                       |
| 1907 | 1,138,856 | 751,646     | 66                    |        |            |              |                       |
| 1908 | 1,647,278 | 873,057     | 53                    | Totals | 76,590,860 | \$57,759,402 |                       |

TIN

Bibliography: Reports XV, XVII, XVIII, XXV. Bulletins 67, 91.

In 1928 and 1929 there was a small amount of tin produced from Californian ore as well as considerable development work which was done at the Temescal mine in Riverside County near Corona. There was an output from the district during 1891-1892 as tabulated below. Small quantities of stream tin have been found in some of the placer workings in northern California, but never in paying amounts.

Two occurrences have also been noted, in northern San Diego County. Crystals of cassiterite were found there, associated with blue tourmaline crystals, amblygonite and beryl. No commercial quantity has been developed, only small pockets have been taken out.

| Total Output of Tin In California |       |         |          |
|-----------------------------------|-------|---------|----------|
| Year                              |       | Pounds  | Value    |
| 1891                              | ----- | 125,289 | \$27,564 |
| 1892                              | ----- | 126,000 | 32,400   |
| 1928}                             | ----- | •       | •        |
| 1929}                             | ----- |         |          |
| Totals                            | ----- | 251,289 | \$59,964 |

\* Annual details concealed under 'Unapportioned.'

## TITANIUM

### *Bibliography:* State Mineralogist's Report XXIII.

During 1934 there was no production of titanium ores reported in California. In 1927 the first recorded shipments of titanium minerals were made in California. The total of the 1927 and 1928 production was 10,013 tons valued at \$150,195. All of this came from Los Angeles County and was produced from either the beach black sands which contained approximately 20% titaniferous iron and magnetite, the gangue being silica and several silicates, or from a lode deposit in the San Gabriel Mountains.

The market price of titanium minerals varies as to the titanium oxide it contains. Present (Aug. 8, 1935) quotations are: Rutile 94% TiO at 10¢ a pound, ilmenite 45 to 52% TiO at \$10 to \$12 a ton, all prices Atlantic seaboard.

## TUNGSTEN

*Bibliography:* Reports XV, XVII, XVIII, XXII, XXIV, XXVII (inc.) XXX. Bulletins 38, 67, 91, 95, U. S. G. S., Bull. 652. Proc. Colo. Sci. Soc., Vol. XI. South Dakota School of Mines, Bulletin No. 12. Eng. and Min. Jour.-Press, Vol. 113, pp. 666-669, Apr. 22, 1922.

The commercial production of tungsten ores and concentrates in California began in 1905; and has been continuous since, with the exception of 1920-1922 (inclusive). The material shipped in 1934 was high-grade sorted ore and concentrates, coming from a single property each in Kern, San Bernardino and Tulare counties. A total of 247 short tons were reported shipped, yielding 261 tons recalculated to 60% WO<sub>3</sub>, valued at \$224,417. The 1934 output showed an increase in both quantity and value as compared with that of 1933, which was 148 tons worth \$76,605.

Quotations in "Metal and Minerals Markets" during 1934 ranged from \$15 to \$19.25 per unit WO<sub>3</sub> for Chinese wolframite, duty paid; \$14 to \$19 per unit WO<sub>3</sub> for Bolivian scheelite, duty paid; from \$14 to \$19 for domestic scheelite. The highest prices were received at the end of the year. Present (Aug. 8, 1935) prices per unit WO<sub>3</sub> at New York are: Chinese wolframite, duty paid, \$15 to \$15.50; Bolivian scheelite, \$15; domestic scheelite, \$15.

Imports of foreign tungsten ores and alloys into the United States during 1934, according to the U. S. Bureau of foreign and Domestic Commerce was 1,570,211 pounds valued at \$339,634, compared with 1,230,608 pounds worth \$162,060 in 1933. The Tariff Act of 1930 raised the duty on tungsten ore or concentrates to 50 cents per pound

on the metallic tungsten contained therein. Duties are also provided for imported tungsten-bearing alloys.

Tungsten ore has been produced in California principally in the Atolia-Randsburg district in San Bernardino and Kern counties, followed by the Bishop district in Inyo County, with small amounts coming from Nevada County and from the district near Goffs, in eastern San Bernardino. Most of California's tungsten ore is scheelite (calcium tungstate), though wolframite (iron-manganese tungstate) and hüberrite (manganese tungstate) also occur. The deposits at Atolia are the largest and most productive scheelite deposits known.

#### Total Tungsten Ore Production of California.

The annual amount and value of tungsten ores and concentrates produced in California since the inception of the industry is given herewith, with tonnages recalculated to 60% WO<sub>3</sub>:

| Year | Tons at<br>60% WO <sub>3</sub> | Value     | Year   | Tons at<br>60% WO <sub>3</sub> | Value        |
|------|--------------------------------|-----------|--------|--------------------------------|--------------|
| 1905 | 57                             | \$18,800  | 1920   |                                |              |
| 1906 | 485                            | 189,100   | 1921   | 34                             | \$19,126     |
| 1907 | 287                            | 120,587   | 1922   | 781                            | 448,009      |
| 1908 | 105                            | 37,750    | 1923   | 573                            | 348,475      |
| 1909 | 577                            | 190,500   | 1924   | 441                            | 316,560      |
| 1910 | 457                            | 208,245   | 1925   | 398                            | 429,237      |
| 1911 | 387                            | 127,706   | 1926   | 150                            | 106,280      |
| 1912 | 572                            | 206,000   | 1927   | 120                            | 82,582       |
| 1913 | 559                            | 234,673   | 1928   | 26                             | 9,509        |
| 1914 | 420                            | 180,575   | 1929   | 148                            | 76,605       |
| 1915 | 962                            | 1,005,467 | 1930   | 261                            | 224,417      |
| 1916 | 2,270                          | 4,571,521 | 1931   |                                |              |
| 1917 | 2,466                          | 3,079,013 | 1932   |                                |              |
| 1918 | 1,982                          | 2,832,222 | 1933   |                                |              |
| 1919 | 214                            | 219,316   | 1934   |                                |              |
|      |                                |           | Totals | 14,732                         | \$15,280,171 |

\* Annual details concealed under 'Unapportioned.'

#### VANADIUM

*Bibliography:* Reports XV, XXVI. Bulletins 67, 91. Proc. Colo. Sci. Soc., Vol. XI. U. S. Bur. of Mines, Bulletin 104.

No commercial production of vanadium has yet been made in California. Occurrences of this metal have been found at Camp Signal, near Goffs, in San Bernardino County, and two companies at one time did considerable development work in the endeavor to open up paying quantities. Some ore carrying lead vanadate has been developed in the 29 Palms, or Washington district, on the line between Riverside and San Bernardino counties, but no shipments reported.

Present New York quotations for ferrovanadium are \$2.70-\$2.90 per pound of vanadium f.o.b. works, and vanadium ore 26¢ per pound V<sub>2</sub>O<sub>5</sub> contained.

#### ZINC

*Bibliography:* State Mineralogist Reports XIV, XV, XVII, XVIII, XX-XXIV, XXVI, XXVII, XXX. Bulletins 38, 67, 91.

The recoverable zinc mined in California during 1934 amounted to 721,719 pounds of metal valued at \$31,034, compared with the 1933 output of 290,222 pounds worth \$12,189. The 1934 production was a carbonate ore coming from Inyo County.

The zinc ores of Shasta and Calaveras counties are associated with copper, while those of Inyo, Los Angeles and San Bernardino are associated principally with lead-silver and zinc-silver ores.

The production of metallic zinc<sup>1</sup> at reduction plants in the United States during 1934 amounted to 383,281 short tons valued at \$32,962,000 of which 8224 tons were reduced from foreign ores and 19,691 tons from secondary metal. The 1934 output was an increase over that of 1932, which was 337,269 short tons worth \$28,331,000.

The average price per pound for zinc in 1934 was 4.3¢, compared with 4.2¢ in 1933, 3.0¢ in 1932, 3.8¢ in 1931, and 4.8¢ in 1930.

#### Total Zinc Production of California.

Total figures for zinc output of the state are as follows, commercial production dating back only to 1906:

| Year | Pounds     | Value     | Year   | Pounds      | Value       |
|------|------------|-----------|--------|-------------|-------------|
| 1906 | 206,000    | \$12,566  | 1921   | 846,184     | \$12,309    |
| 1907 | 177,759    | 10,598    | 1922   | 3,034,430   | 172,963     |
| 1908 | 54,000     | 3,544     | 1923   |             |             |
| 1909 |            |           | 1924   | 3,060,000   | 198,900     |
| 1910 |            |           | 1925   | 11,546,602  | 877,542     |
| 1911 | 2,679,842  | 152,751   | 1926   | 20,447,559  | 1,533,568   |
| 1912 | 4,331,391  | 298,866   | 1927   | 8,625,004   | 552,000     |
| 1913 | 1,157,947  | 64,845    | 1928   |             |             |
| 1914 | 399,641    | 20,381    | 1929   |             |             |
| 1915 | 13,043,411 | 1,617,383 | 1931   | 149,865     | 5,314       |
| 1916 | 15,950,565 | 2,137,375 | 1932   |             |             |
| 1917 | 11,854,804 | 1,209,190 | 1933   | 290,222     | 12,189      |
| 1918 | 5,565,516  | 506,466   | 1934   | 721,719     | 31,034      |
| 1919 | 1,384,192  | 101,046   |        |             |             |
| 1920 | 1,188,009  | 96,229    | Totals | 106,714,710 | \$9,657,059 |

<sup>1</sup> U. S. Bureau of Mines, Mineral Market Report 352, March 8, 1935.

## CHAPTER FOUR

## STRUCTURAL MATERIALS

*Bibliography:* State Mineralogist Reports XII-XXXI (Inc.). Bulletin 38. Spurr and Wormser, "Marketing of Metals and Minerals." "Non-Metallic Minerals," by R. B. Ladoo. See also under each substance.

As indicated by this subdivision heading, the mineral substances herein considered are those more or less directly used in building and structural work. California is independent, so far as these are concerned, and almost any reasonable construction can be made with materials produced in the State. Chromite, which was previously listed under structural material in the statistical reports of the State Division of Mines, is now transferred to the metals group, thus coinciding with the practice of the United States Bureau of Mines.

This branch of the mineral industry for 1934 was valued at \$22,078,929, as compared with a total value of \$19,444,544 for the year 1933. All materials grouped under this classification showed an increased value in 1934 over the previous year with the exception of marble and slate, both of which showed decreased values.

In 1934 all counties, with the exception of Sutter, contributed to this structural total. There is not a county in the fifty-eight counties of the State which is not capable of producing at least one of the materials under the classification and in 1926 every county contributed one or more substances to the group.

The following summary shows the value of the structural materials produced in California during the years 1933-1934, with increases or decreases in each instance:

| Substance                      | 1933            |                      | 1934            |                      | Increase +<br>Decrease -<br>Value |
|--------------------------------|-----------------|----------------------|-----------------|----------------------|-----------------------------------|
|                                | Amount          | Value                | Amount          | Value                |                                   |
| Brick and hollow building tile |                 | \$1,520,481          |                 | \$1,644,661          | \$124,180+                        |
| Cement                         | 7,284,031 bbls. | 10,331,395           | 8,936,085 bbls. | 12,445,616           | 2,114,221+                        |
| Granite                        |                 | 183,706              |                 | 249,083              | 65,377+                           |
| Lime                           | 33,425 tons     | 271,619              | 32,500 tons     | 309,765              | 38,146+                           |
| Marble <sup>a</sup>            |                 | 23,178               |                 | 10,759               | 12,419-                           |
| Sandstone                      |                 | 10,888               |                 | 14,245               | 3,357+                            |
| Slate                          | 5,343 tons      | 31,958               | 5,065           | 24,245               | 7,713-                            |
| Stone, miscellaneous           |                 | 6,871,581            |                 | 7,131,330            | 259,749+                          |
| Unapportioned                  |                 | <sup>b</sup> 199,738 |                 | <sup>c</sup> 249,125 | 49,387+                           |
| Total value                    |                 | \$19,444,544         |                 | \$22,078,929         |                                   |
| Net increase                   |                 |                      |                 |                      | \$2,634,385+                      |

<sup>a</sup> Includes onyx and travertine.

<sup>b</sup> Includes bituminous rock, magnesite, tube-mill pebbles.

<sup>c</sup> Includes bituminous rock, magnesite, paving blocks, tube-mill pebbles.

## ASPHALT

*Bibliography:* State Mineralogist Reports VII, X, XII-XV (inc.), XVII, XVIII. Bulletins 16, 32, 63, 67, 69, 91.

Asphalt was for a number of years accounted for in the statistical reports by the State Mining Bureau, because in the early days of the

oil industry, considerable asphalt was produced from outcroppings of oil sand, and was a separate industry from the production of oil itself. However, at the present time most of the asphalt comes from the oil refineries, which produce a better and more uniform grade; hence, its value is not now included in the mineral total, as to do so would be in part a duplication of the crude petroleum figures. Such natural asphalt as is at present mined is in the form of bituminous sandstones, and is recorded under that designation.

### BITUMINOUS ROCK

*Bibliography:* State Mineralogist Reports XII, XIII, XV, XVII, XVIII, XXI, XXII, XXV, XXVI.

This material is essentially an uncemented sandstone which is saturated with and held together by a natural asphaltic constituent, probably the residue from the evaporation of a crude petroleum deposit. Bituminous rock is still used to a limited extent for road dressing in those districts adjacent to available deposits, though the manufacture of asphalt at the oil refineries has almost entirely superseded the direct use of the native material. Some of the Santa Cruz County production is put on the market as a material which can be laid cold. This material is especially applicable and valuable for patch jobs.

During 1933 shipments of bituminous rock were made from Santa Barbara and Santa Cruz counties with a single producer in each. The annual details are concealed under the 'Unapportioned' item so as not to reveal the output of either operator. The total of the 1933 and 1934 yields was 36,793 short tons valued at \$130,301. The 1934 output showed an increase in both amount and value over that of 1933.

### Bituminous Rock Production of California, by Years.

The following tabulation shows the total amount and value of bituminous rock quarried and sold in California, from the records compiled by the State Mining Bureau, annually since 1887:

| Year      | Tons   | Value     | Year        | Tons      | Value       |
|-----------|--------|-----------|-------------|-----------|-------------|
| 1887..... | 36,000 | \$160,000 | 1912.....   | 44,073    | \$87,467    |
| 1888..... | 50,000 | 257,000   | 1913.....   | 37,541    | 78,479      |
| 1889..... | 40,000 | 170,000   | 1914.....   | 66,119    | 166,618     |
| 1890..... | 40,000 | 170,000   | 1915.....   | 17,789    | 61,468      |
| 1891..... | 39,962 | 154,164   | 1916.....   | 19,449    | 60,561      |
| 1892..... | 24,000 | 72,000    | 1917.....   | 5,590     | 18,580      |
| 1893..... | 32,000 | 192,036   | 1918.....   | 2,561     | 9,067       |
| 1894..... | 31,214 | 115,193   | 1919.....   | 4,614     | 18,537      |
| 1895..... | 38,921 | 121,586   | 1920.....   | 5,450     | 27,825      |
| 1896..... | 49,456 | 122,500   | 1921.....   | 8,298     | 43,192      |
| 1897..... | 45,470 | 128,173   | 1922.....   | 4,624     | 13,570      |
| 1898..... | 46,836 | 137,575   | 1923.....   | 2,945     | 11,780      |
| 1899..... | 40,321 | 116,097   | 1924.....   | 6,040     | 14,922      |
| 1900..... | 25,306 | 71,495    | 1925.....   | 2,681     | 10,724      |
| 1901..... | 24,052 | 66,354    | 1926.....   | 3,863     | 21,577      |
| 1902..... | 33,490 | 43,411    | 1927.....   | 3,515     | 17,704      |
| 1903..... | 21,944 | 53,106    | 1928.....   | 4,966     | 33,832      |
| 1904..... | 45,280 | 175,680   | 1929.....   | 3,320     | 14,360      |
| 1905..... | 24,753 | 60,436    | 1930.....   | 8,525     | 36,075      |
| 1906..... | 16,077 | 45,204    | 1931.....   | 23,653    | 109,140     |
| 1907..... | 24,122 | 72,835    | 1932.....   | 36,793    | 130,301     |
| 1908..... | 30,718 | 109,818   | 1933.....   |           |             |
| 1909..... | 34,123 | 116,436   | 1934.....   |           |             |
| 1910..... | 87,547 | 165,711   |             |           |             |
| 1911..... | 75,125 | 117,279   | Totals..... | 1,269,126 | \$4,005,868 |

\* Annual details concealed under 'Unapportioned.'

**BRICK AND HOLLOW TILE**

*Bibliography:* State Mineralogist Reports VIII, X, XII–XV (inc.), XVII–XXVIII (inc.). Bulletins 38, 99. Preliminary Report No. 7. Cal. Jour. of Development, June, 1925, pp. 5–6.

Bricks of many varieties and in important quantities are annually produced in California, as might be expected in a state with such diversified and widespread mineral resources. The varieties include common, fire, pressed, glazed, enamel, fancy, vitrified, sand-lime, and others. Not only do the plants here supply practically all of our own requirements in these products, but considerable quantities are shipped to contiguous territory and certain products are shipped over a much wider radius.

We also include under this heading the various forms of hollow building 'tile' or blocks. The application of this title to residence construction as well as to other structures has grown, although their total output for 1934 showed a decrease in value and tonnage as compared with the 1933 production.

During 1934 the output of all kinds of brick showed an increased value of 12 per cent and a decrease in amount of 14 per cent as compared with that of 1933; this is accounted for by the fact that there was less common brick made and more fire, glazed, pressed, fancy, and vitrified paving-brick manufactured during the year. The 1934 production consisted of 46,795 M of common brick valued at \$515,407; 15,967 M of fire brick valued at \$843,775; 3976 M of glazed, pressed, fancy, and vitrified paving-brick valued at \$113,474; and 17,534 tons of hollow building tile valued at \$172,005, which gave a total value for the year for brick and hollow building-tile of \$1,644,661. The 1933 output had a total value of \$1,520,481.

Los Angeles County had the largest output of brick and building-tile, with eighteen companies producing 23,456 M of common brick worth \$271,236; 6649 M of fire brick worth \$390,621; 634 M of fancy, pressed, and glazed brick worth \$23,754; and 3478 tons of hollow building-tile worth \$24,960. Alameda County had five plants operated by four companies with an output having a total value of \$192,527; Contra Costa County with three operating plants had a production having a total value of \$368,572; Sacramento County with three plants had an output worth \$40,572; Santa Clara County with three plants had an output worth \$54,154. There were two operating plants in each, Riverside, San Diego, and San Joaquin counties and one each in Amador, Butte, Fresno, Humboldt, Kern, Marin, Orange, Placer, San Bernardino, San Luis Obispo, Santa Barbara, Tulare, and Ventura counties.

**Brick and Hollow Tile Production of California, by Years.**

Record of brick production in the State has been kept since 1893 by this Bureau, the figures for hollow building 'tile' or blocks being also included since 1914. The annual and total figures, for amount and value, are given in the following table:



| Year   | Brick, M   | Hollow<br>building<br>blocks, tons | Value         |
|--------|------------|------------------------------------|---------------|
| 1893   | 103,900    | -----                              | \$801,750     |
| 1894   | 81,675     | -----                              | 457,125       |
| 1895   | 131,772    | -----                              | 672,360       |
| 1896   | 24,000     | -----                              | 524,740       |
| 1897   | 97,468     | -----                              | 563,240       |
| 1898   | 100,102    | -----                              | 571,362       |
| 1899   | 125,950    | -----                              | 754,730       |
| 1900   | 137,191    | -----                              | 905,210       |
| 1901   | 130,766    | -----                              | 860,488       |
| 1902   | 169,851    | -----                              | 1,306,215     |
| 1903   | 214,403    | -----                              | 1,999,546     |
| 1904   | 281,750    | -----                              | 1,994,740     |
| 1905   | 286,618    | -----                              | 2,273,786     |
| 1906   | 277,762    | -----                              | 2,538,848     |
| 1907   | 362,167    | -----                              | 3,438,951     |
| 1908   | 332,872    | -----                              | 2,506,495     |
| 1909   | 333,846    | -----                              | 3,059,929     |
| 1910   | 340,883    | -----                              | 2,934,731     |
| 1911   | 327,474    | -----                              | 2,638,121     |
| 1912   | 337,233    | -----                              | 2,940,290     |
| 1913   | 358,754    | -----                              | 2,915,350     |
| 1914   | 270,791    | -----                              | 2,288,227     |
| 1915   | 180,538    | -----                              | 1,678,756     |
| 1916   | 206,960    | -----                              | 2,096,570     |
| 1917   | 192,269    | 29,348                             | 2,532,721     |
| 1918   | 136,374    | 34,818                             | 2,363,481     |
| 1919   | 156,328    | 36,026                             | 3,087,067     |
| 1920   | 245,842    | 99,208                             | 5,704,393     |
| 1921   | 238,022    | 67,100                             | 5,570,875     |
| 1922   | 374,853    | 105,909                            | 7,994,991     |
| 1923   | 397,754    | 122,534                            | 9,738,082     |
| 1924   | 456,716    | 114,469                            | 9,137,908     |
| 1925   | 361,094    | 105,491                            | 7,503,976     |
| 1926   | 388,048    | 90,332                             | 7,026,124     |
| 1927   | 374,111    | 75,116                             | 6,516,077     |
| 1928   | 272,443    | 66,277                             | 5,694,770     |
| 1929   | 327,011    | 66,713                             | 5,607,410     |
| 1930   | 267,019    | 68,047                             | 4,205,460     |
| 1931   | 151,545    | 51,988                             | 2,560,415     |
| 1932   | 90,683     | 27,098                             | 1,605,086     |
| 1933   | 76,905     | 25,814                             | 1,520,481     |
| 1934   | 66,738     | 17,534                             | 1,644,661     |
| Totals | 10,088,481 | 1,203,822                          | \$132,735,538 |

## CEMENT

*Bibliography:* State Mineralogist Reports VIII, IX, XII, XIV, XV, XVII, XVIII, XXI-XXVIII (inc.). Bulletin 38.

During 1934 there was a production in California of 8,936,085 barrels of cement valued at \$12,445,616 f.o.b. plant, of which 3,600,153 barrels came from northern California plants and 5,335,932 barrels from southern California plants. The 1934 output was an increase over that of 1933 which was 7,284,031 barrels worth \$10,331,375.

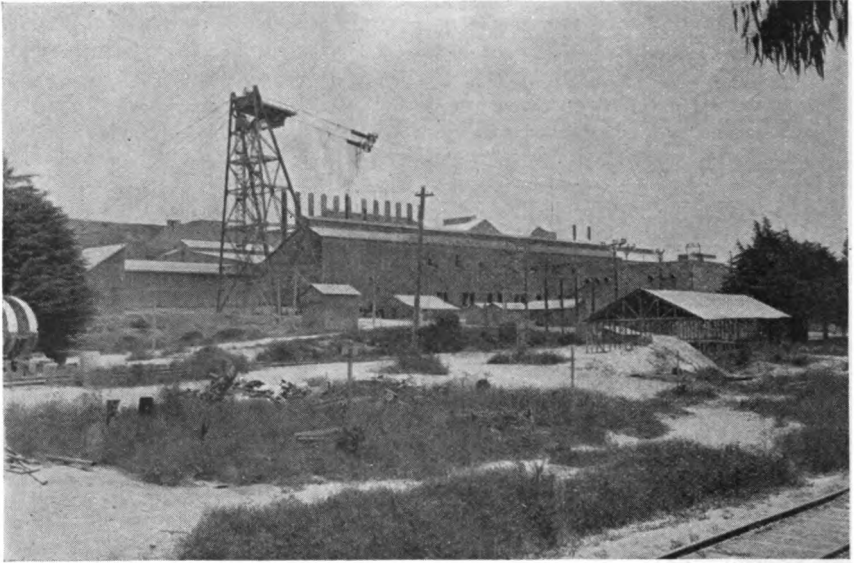
Shipments, during 1934, were made from ten plants in nine counties to the extent of 8,591,951 barrels valued at \$12,417,337, as compared with those of the previous year, which were 7,369,947 barrels worth \$10,520,083. There were operating during the year, five plants in northern California, one each in Calaveras, Contra Costa, Merced, San Mateo and Santa Cruz counties, which shipped 3,357,260 barrels of cement, and five plants in southern California, two in San Bernardino, and one each in Kern, Los Angeles,<sup>1</sup> and Riverside counties, which shipped 5,234,691 barrels. There were 1697 men employed in the above plants in 1934.

<sup>1</sup> The plant in Los Angeles County grinds clinker coming from Kern and San Bernardino counties, therefore the crude material is credited to the later two.

**Cement Production of California, by Years.**

'Portland' cement was first commercially produced in California in 1891; though in 1860 and for several years following, a natural hydraulic cement from Benicia was utilized in building operations in San Francisco.

"The Benicia Cement Company in 1859-60 was turning out 50 to 100 barrels of cement a day and San Francisco was using about 12,000 barrels a year. The mill price of the product was then \$4 a barrel. By 1865, the San Francisco rate of consumption had increased to 100,000



Santa Cruz Portland Cement Company, at Davenport, Santa Cruz County.

*Photo by Walter W. Bradley.*

barrels yearly, brick buildings largely taking the place of frame structures, and the price of cement had fallen to \$2.50 a barrel, about the same as it is today."<sup>1</sup>

The growth of the industry became rapid after 1902; since which time cement has continued to be an important factor in the industrial life of the state. Although the total cement figures, to date, are not of the same magnitude as those for gold and petroleum, it is interesting to note that the value of California's cement yield in the period 1920-1931 annually exceeded the value of her gold output.

<sup>1</sup> Monthly Review of Mercantile Trust Co. of Calif., Vol. XIII, No. 3, p. 55, Mar. 1924.

## Cement Production of California, by Years

| Year      | Barrels   | Value     | Year        | Barrels     | Value         |
|-----------|-----------|-----------|-------------|-------------|---------------|
| 1891..... | 5,000     | \$15,000  | 1914.....   | 5,109,218   | \$6,558,148   |
| 1892..... | 5,000     | 15,000    | 1915.....   | 4,918,275   | 6,044,950     |
| 1893..... |           |           | 1916.....   | 5,299,507   | 6,210,293     |
| 1894..... | 8,000     | 21,600    | 1917.....   | 5,790,734   | 7,544,282     |
| 1895..... | 16,383    | 32,556    | 1918.....   | 4,772,921   | 7,969,909     |
| 1896..... | 9,500     | 28,250    | 1919.....   | 4,645,289   | 8,591,990     |
| 1897..... | 18,000    | 66,000    | 1920.....   | 6,709,160   | 14,962,945    |
| 1898..... | 50,000    | 150,000   | 1921.....   | 7,404,221   | 18,072,120    |
| 1899..... | 60,000    | 180,000   | 1922.....   | 8,962,135   | 16,524,056    |
| 1900..... | 52,000    | 121,000   | 1923.....   | 10,825,405  | 25,999,203    |
| 1901..... | 71,800    | 159,842   | 1924.....   | 11,655,131  | 23,225,850    |
| 1902..... | 171,000   | 423,600   | 1925.....   | 13,206,630  | 25,043,335    |
| 1903..... | 640,868   | 968,727   | 1926.....   | 13,797,173  | 25,269,678    |
| 1904..... | 969,838   | 1,539,807 | 1927.....   | 14,661,783  | 26,474,935    |
| 1905..... | 1,265,553 | 1,791,916 | 1928.....   | 13,625,231  | 24,463,287    |
| 1906..... | 1,286,000 | 1,941,250 | 1929.....   | 12,794,729  | 21,038,565    |
| 1907..... | 1,613,563 | 2,585,577 | 1930.....   | 9,831,938   | 14,575,731    |
| 1908..... | 1,629,615 | 2,359,692 | 1931.....   | 7,693,712   | 11,510,655    |
| 1909..... | 3,779,205 | 4,969,437 | 1932.....   | 5,657,549   | 7,967,107     |
| 1910..... | 5,453,193 | 7,485,715 | 1933.....   | 7,284,031   | 10,331,395    |
| 1911..... | 6,371,369 | 9,085,625 | 1934.....   | 8,936,085   | 12,445,616    |
| 1912..... | 6,198,634 | 6,074,661 |             |             |               |
| 1913..... | 6,167,806 | 7,743,024 | Totals..... | 219,422,884 | \$368,582,319 |

## GRANITE

*Bibliography:* State Mineralogist Reports X, XII-XXVI (inc.), XXVIII. Bulletin 38.

The 1934 output of granite consisted of 60,762 cu. ft. of building stone valued at \$212,114; 15,400 cu. ft. of monumental stone valued at \$32,680; 200 linear ft. of curbing valued at \$800; and 1735 cu. ft. of unclassified material, including a small amount of tuff and some volcanic rock, which was used as building stone and flagstone, having a value of \$3,489; giving the total value for the year's yield at \$249,083. This was a increase over the 1933 total, which was \$183,706. The 1934 material came from sixteen quarries in eleven counties, four of which were in San Diego County; with two each in Fresno and Sonoma counties; and one each in Madera, Mariposa, Nevada, Placer, Plumas, Sacramento, San Luis Obispo, and Ventura counties. The material from San Luis Obispo, Sonoma and Ventura counties was tuff.

So far as possible, granite production has been segregated in the statement herewith into the various uses to which the product was put. It will be noted, however, that a portion of the output has been entered under the heading 'Unclassified.' This is necessary because of the fact that some of the producers have no way of telling to what specific use their stone was put after they had quarried and sold the same in the rough.

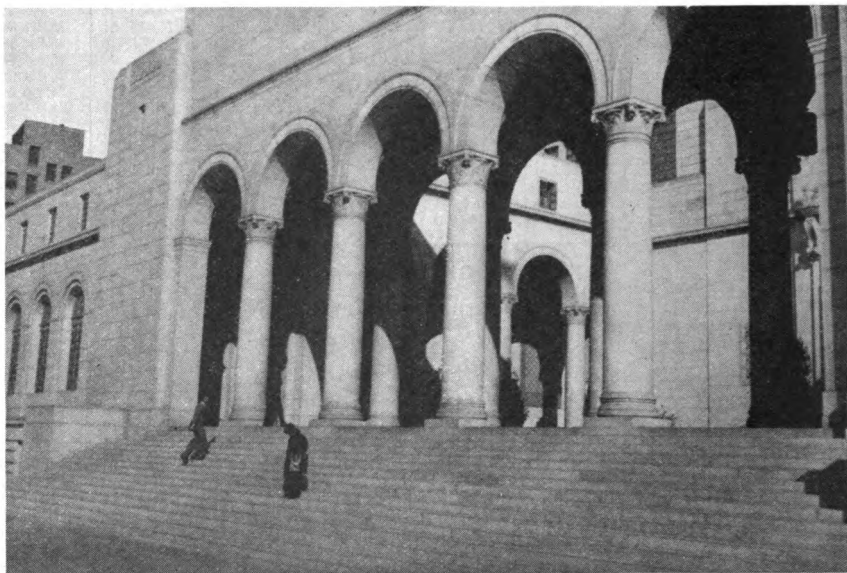
## Varieties.

For building purposes, the granites found in California, particularly the varieties from Raymond in Madera County, Rocklin in Placer County, and near Porterville in Tulare County, are unexcelled by any similar stone found elsewhere. The quantities available, notably at Raymond and Porterville, are unlimited. Most of California's 'granite,' particularly that found in the Sierra Nevada Mountains, is technically 'granodiorite' (that is, both plagioclase and orthoclase feldspars are present).

Granites of excellent quality for building and ornamental purposes are also quarried in Riverside and San Diego counties. Near Lakeside,

San Diego County, there is a fine-grained, 'silver gray' granite of uniform texture and color, especially suited for monumental and ornamental work.

The Fresno County stone is a dark, hornblende diorite, locally called 'black granite,' whose color permits of a fine contrast of polished and unpolished surfaces, making it particularly suitable for monumental and decorative purposes. There is also a similar 'black granite' in Tulare County, near Success.



California (Madera County) granite, in new City Hall at Los Angeles.

*Photo by Walter W. Bradley.*

#### Granite Production of California, by Years.

The value of granite produced, annually, since 1887 has been as follows:

| Year      | Value     | Year             | Value        |
|-----------|-----------|------------------|--------------|
| 1887..... | \$150,000 | 1912.....        | \$362,975    |
| 1888..... | 57,000    | 1913.....        | 981,277      |
| 1889..... | 1,329,018 | 1914.....        | 628,786      |
| 1890..... | 1,200,000 | 1915.....        | 227,928      |
| 1891..... | 1,300,000 | 1916.....        | 535,339      |
| 1892..... | 1,000,000 | 1917.....        | 221,997      |
| 1893..... | 531,322   | 1918.....        | 139,861      |
| 1894..... | 228,816   | 1919.....        | 220,743      |
| 1895..... | 224,329   | 1920.....        | 495,732      |
| 1896..... | 201,004   | 1921.....        | 725,901      |
| 1897..... | 188,024   | 1922.....        | 676,643      |
| 1898..... | 147,732   | 1923.....        | 760,081      |
| 1899..... | 141,070   | 1924.....        | 1,211,046    |
| 1900..... | 295,772   | 1925.....        | 1,853,859    |
| 1901..... | 519,285   | 1926.....        | 655,332      |
| 1902..... | 255,239   | 1927.....        | 1,398,443    |
| 1903..... | 678,670   | 1928.....        | 763,996      |
| 1904..... | 467,472   | 1929.....        | 1,169,271    |
| 1905..... | 353,837   | 1930.....        | 855,477      |
| 1906..... | 344,083   | 1931.....        | 636,741      |
| 1907..... | 373,376   | 1932.....        | 398,676      |
| 1908..... | 512,923   | 1933.....        | 183,706      |
| 1909..... | 376,834   | 1934.....        | 249,083      |
| 1910..... | 417,898   |                  |              |
| 1911..... | 355,742   | Total value..... | \$27,002,339 |

## LIME

*Bibliography:* Reports XIV, XV, XVII–XXIX (inc.) Bulletin 38.

In California during 1934 there was an output of lime to the amount of 32,500 short tons valued at \$309,765, coming from two plants each in El Dorado, San Bernardino and Santa Cruz counties, and one each in Alameda and Tuolumne counties. The above figures showed an increased value although there was a slight decrease in amount as compared with that of 1933, which were 33,425 tons worth \$271,619.

So far as we have been able to segregate the data, these figures include mainly only such lime as is used in building operations; though they do include a small proportion of calcined lime employed in agriculture and the chemical industries, the figures for which were not separable. A portion is hydrated lime. Limestone utilized in sugar making for smelter flux, as a fertilizer, and other special industrial uses, are classified under 'Industrial Materials.' That consumed in cement manufacture is included in the value of cement.

**Lime Production of California, by Years.**

The following tabulation gives the amounts and value of lime produced in California by years since 1894 when compilation of such records was begun by the State Mining Bureau. The figures for quantity have been recalculated from 'barrels', as shown in the earlier reports, to 'tons' for the years 1894–1922 (inc.):

| Year | Tons   | Value     | Year   | Tons      | Value        |
|------|--------|-----------|--------|-----------|--------------|
| 1894 | 37,350 | \$318,700 | 1916   | 49,364    | \$390,475    |
| 1895 | 39,776 | 386,094   | 1917   | 50,073    | 311,380      |
| 1896 | 30,275 | 261,505   | 1918   | 43,684    | 461,315      |
| 1897 | 28,780 | 252,900   | 1919   | 42,070    | 552,043      |
| 1898 | 28,786 | 254,010   | 1920   | 46,314    | 557,232      |
| 1899 | 29,985 | 314,575   | 1921   | 46,353    | 610,619      |
| 1900 | 31,252 | 283,609   | 1922   | 57,875    | 671,747      |
| 1901 | 31,738 | 334,688   | 1923   | 70,894    | 788,834      |
| 1902 | 44,866 | 369,616   | 1924   | 62,029    | 703,355      |
| 1903 | 49,659 | 418,280   | 1925   | 61,922    | 685,528      |
| 1904 | 57,945 | 571,749   | 1926   | 63,568    | 670,837      |
| 1905 | 61,700 | 555,322   | 1927   | 60,498    | 631,497      |
| 1906 | 68,927 | 763,060   | 1928   | 56,616    | 547,919      |
| 1907 | 68,422 | 756,376   | 1929   | 42,834    | 417,101      |
| 1908 | 39,639 | 379,243   | 1930   | 47,662    | 452,084      |
| 1909 | 52,075 | 577,824   | 1931   | 36,189    | 360,523      |
| 1910 | 47,951 | 477,683   | 1932   | 27,510    | 254,223      |
| 1911 | 42,959 | 390,988   | 1933   | 33,425    | 271,619      |
| 1912 | 52,212 | 464,440   | 1934   | 32,500    | 309,765      |
| 1913 | 61,344 | 528,547   |        |           |              |
| 1914 | 43,996 | 378,663   |        |           |              |
| 1915 | 35,653 | 286,304   | Totals | 1,917,770 | \$18,972,362 |

## MAGNESITE

*Bibliography:* State Mineralogist Reports XII–XV (inc.), XVII–XXVII (inc.), XXX. Bulletins 38, 79, 91. U. S. Geol. Surv., Bulletins 355, 540. Min. Res. 1913, Pt. II, pp. 450–453. Min. & Sci. Press, Vol. 114, p. 237. "Magnesite"—Hearings before Comm. on Ways and Means, House of Repr., on H. R. 5218, June 16, 17, and July 17, 1919. Eng. Soc. W. Penn., Proc. 1913, Vol. 29, pp. 305–388, 418–444. Eng. & Min. Jour.-Pres., Vol. 114, July 29, and Dec. 2, 1922. U. S. Tariff Comm., "Crude

and Caustic Calcined Magnesite. A Preliminary Statement of Information," May 19, 1926.

The production of crude magnesite in California during 1933 came from a single property each in Santa Clara and Stanislaus counties, both being operated by the same company. The annual details are concealed under the 'Unapportioned' item to conceal the output of this single operator. Practically all was shipped in the calcined form.

The 1934 output showed an increase in both quantity and value from the 1933 figures. The 1932-1933 output showed a total of 40,303 short tons of crude magnesite valued at \$282,325, of which only a small amount was sold as such. Most of this material was calcined. The operators' reports show that a total of 17,400 short tons of calcined material, valued at \$524,350 rail shipping point, was shipped during 1932-1933, dead-burned and pericclass for refractories and material for the plastic trade. From two to two and one-half tons of crude material are required to make one ton of calcined. The average price for crude magnesite reported in 1934 was \$6.50 per ton, compared with \$5.60 per ton in 1933; \$10.00 per ton in 1932; \$8.45 per ton in 1931; \$10.04 per ton in 1930; and \$10.32 per ton in 1929.

In California the known deposits are mostly in the metamorphic rocks of the Coast Ranges and the Sierra Nevada, being associated with serpentine areas. The notable exceptions are the sedimentary deposits at Bissell in Kern County and at Afton in San Bernardino County. Several thousand tons have been shipped from the Bissell deposit; and small shipments have been made from the Afton property.

#### Imports.

The tariff act of 1930 placed the following import duties on magnesite: Crude magnesite 15/32¢ per lb., caustic-calcined magnesite 15/16¢ per lb., dead-burned and grain magnesite, not suitable for manufacture into oxychloride cements, 23/40¢ per lb.; magnesite brick ¾¢ per lb., and 10 per cent ad valorem. The figures of imports for 1934, as published by the U. S. Bureau of Foreign and Domestic Commerce, show a total of 24,523 short tons valued at \$404,751, as compared with 25,370 tons worth \$375,061 in 1933.

#### Total Magnesite Production of California.

The first commercial production of magnesite in California was made in the latter part of 1886 from the Cedar Mountain district,<sup>1</sup> southeast of Livermore, Alameda County. Shipments amounting to 'several tons' or 'several carloads' were sent by rail to New York; but there is apparently no exact record of the amount for that first year. The statistical records of the State Mining Bureau began with the year 1887, and the table herewith shows the figures for amount and value, annually, from that time. Shipments of magnesite from Napa County began in 1891 from the Snowflake Mine; from the Red Mountain deposits in Santa Clara County, in 1899; and from Tulare County in 1900.

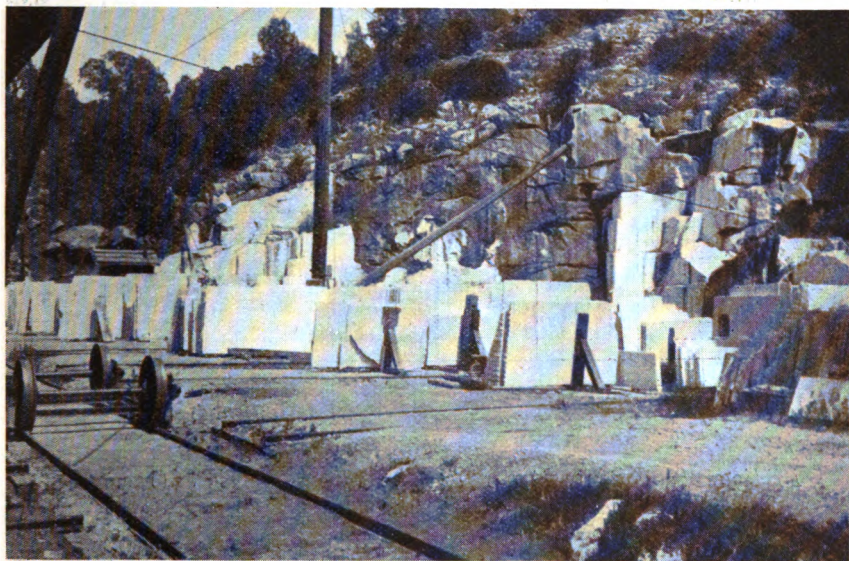
<sup>1</sup> See U. S. Geol. Surv.; Mineral Resources of U. S., 1886, pp. 6 and 696.



## Total Magnesite Production of California

| Year      | Tons   | Value   | Year        | Tons      | Value        |
|-----------|--------|---------|-------------|-----------|--------------|
| 1887..... | 600    | \$9,000 | 1912.....   | 10,512    | \$105,120    |
| 1888..... | 600    | 9,000   | 1913.....   | 9,632     | 77,056       |
| 1889..... | 600    | 9,000   | 1914.....   | 11,438    | 114,380      |
| 1890..... | 600    | 9,000   | 1915.....   | 30,271    | 283,461      |
| 1891..... | 1,500  | 15,000  | 1916.....   | 154,052   | 1,311,893    |
| 1892..... | 1,500  | 15,000  | 1917.....   | 209,648   | 1,976,227    |
| 1893..... | 1,093  | 10,930  | 1918.....   | 83,974    | 803,492      |
| 1894..... | 1,440  | 10,240  | 1919.....   | 44,696    | 452,094      |
| 1895..... | 2,200  | 17,000  | 1920.....   | 83,695    | 1,033,491    |
| 1896..... | 1,500  | 11,000  | 1921.....   | 47,837    | 511,102      |
| 1897..... | 1,143  | 13,671  | 1922.....   | 55,637    | 594,665      |
| 1898..... | 1,263  | 19,075  | 1923.....   | 73,963    | 946,643      |
| 1899..... | 1,280  | 18,480  | 1924.....   | 67,236    | 900,183      |
| 1900..... | 2,262  | 19,333  | 1925.....   | 64,623    | 872,944      |
| 1901..... | 4,726  | 43,057  | 1926.....   | 50,915    | 587,642      |
| 1902..... | 2,830  | 20,655  | 1927.....   | 46,093    | 577,887      |
| 1903..... | 1,361  | 20,515  | 1928.....   | 45,645    | 501,590      |
| 1904..... | 2,850  | 9,298   | 1929.....   | 47,269    | 488,014      |
| 1905..... | 3,933  | 16,221  | 1930.....   | 38,681    | 388,472      |
| 1906..... | 4,032  | 40,320  | 1931.....   | 21,576    | 182,283      |
| 1907..... | 6,405  | 57,720  | 1932.....   | 40,303    | 282,325      |
| 1908..... | 10,582 | 80,822  | 1933.....   | *         | *            |
| 1909..... | 7,942  | 62,588  | 1934.....   | *         | *            |
| 1910..... | 16,570 | 113,887 |             |           |              |
| 1911..... | 8,858  | 67,430  |             |           |              |
|           |        |         | Totals..... | 1,325,806 | \$13,709,206 |

\* Combined under "Unapportioned"



Stock-pile in yard of Columbia Marble Company, near Columbia, Tuolumne County.

Photo by Walter W. Bradley.

## MARBLE

*Bibliography:* State Mineralogist Reports XII-XV (inc.), XVII-XXX (inc.). Bulletin 38. U. S. Bur. of Mines Bull. 106.

The 1934 production of marble in California was valued at \$10,579 (including some onyx and travertine from Solano County and a small

amount of limestone used as building stone and flagstone coming from an operator in Santa Barbara County). The marble came from a single quarry in Tuolumne County. The 1934 output showed a decrease in value from that of 1933, which was worth \$23,198.

California has many beautiful and serviceable varieties of marble, suitable for almost any conceivable purpose of construction or decoration. In the decorative class are deposits of onyx marble of beautiful coloring and effects. There is also serpentine marble suitable for electrical switchboard use.

#### Marble Production of California, by Years.

Data on annual production since 1887, as compiled by the State Mining Bureau, follows. Previous to 1894 no records of amounts were preserved.

Total Production of Marble in California, by Years

| Year | Cubic feet | Value   | Year             | Cubic feet | Value       |
|------|------------|---------|------------------|------------|-------------|
| 1887 |            | \$5,000 | 1912             | 27,820     | \$74,120    |
| 1888 |            | 5,000   | 1913             | 41,654     | 113,282     |
| 1889 |            | 87,030  | 1914             | 25,436     | 48,832      |
| 1890 |            | 80,000  | 1915             | 22,186     | 41,518      |
| 1891 |            | 100,000 | 1916             | 25,954     | 50,280      |
| 1892 |            | 115,000 | 1917             | 24,755     | 62,950      |
| 1893 |            | 40,000  | 1918             | *17,428    | 49,898      |
| 1894 | 38,441     | 98,326  | 1919             | 25,020     | 74,482      |
| 1895 | 14,864     | 56,566  | 1920             | b29,531    | 92,899      |
| 1896 | 7,889      | 32,415  | 1921             | 30,232     | 98,395      |
| 1897 | 4,102      | 7,280   | 1922             | 38,321     | 127,792     |
| 1898 | 8,050      | 23,594  | 1923             | 28,015     | 124,919     |
| 1899 | 9,682      | 10,550  | 1924             | *31,579    | 140,253     |
| 1900 | 4,103      | 5,891   | 1925             | 35,664     | 116,105     |
| 1901 | 2,945      | 4,630   | 1926             | 34,806     | 119,999     |
| 1902 | 19,305     | 37,616  | 1927             | b42,308    | 103,689     |
| 1903 | 84,624     | 97,354  | 1928             | b34,324    | 82,190      |
| 1904 | 55,401     | 94,208  | 1929             | b72,881    | 93,661      |
| 1905 | 73,303     | 129,450 | 1930             | b65,775    | 82,194      |
| 1906 | 31,400     | 75,800  | 1931             | b37,776    | 81,760      |
| 1907 | 37,512     | 118,066 | 1932             | b25,506    | 42,505      |
| 1908 | 18,653     | 47,665  | 1933             | b9,039     | 23,178      |
| 1909 | 79,600     | 238,400 | 1934             | b7,185     | 10,759      |
| 1910 | 18,960     | 50,200  |                  |            |             |
| 1911 | 20,201     | 54,103  |                  |            |             |
|      |            |         | Total value..... |            | \$3,469,804 |

\* Includes onyx and serpentine.

b Includes onyx and travertine.

#### ONYX and TRAVERTINE

*Bibliography:* State Mineralogist Reports XII-XV (inc.), XVII, XVIII, XXI, XXIII. Bulletin 38.

Onyx and travertine are known to exist in a number of places in California, but there has been only a small and irregular production since the year 1896. In 1934 there was one producer of travertine in Solano County. The 1934 output showed an increase in both quantity and value from that of 1933, the figures of which are combined with marble. This material is used in terrazzo, auto gear-shift handles, bases for fountain-pen desk sets, and other ornamental purposes.



**Onyx Production of California, by Years.**

Production by years has been as follows :

| Year      | Value  | Year             | Value     |
|-----------|--------|------------------|-----------|
| 1887..... | •      | 1923.....        | \$2,510   |
| 1888..... | \$900  | 1924.....        | •         |
| 1889..... | 900    | 1925.....        | 16,120    |
| 1890..... | 900    | 1926.....        | 7,575     |
| 1891..... | 1,500  | 1927.....        | •         |
| 1892..... | 2,400  | 1928.....        | •         |
| 1893..... | 1,800  | 1929.....        | •         |
| 1894..... | 27,000 | 1930.....        | •         |
| 1895..... | 20,000 | 1931.....        | •         |
| 1896..... | 12,000 | 1932.....        | •         |
| 1918..... | 24,000 | 1933.....        | •         |
| 1919..... | •      | 1934.....        | •         |
| 1920..... | •      |                  |           |
| 1921..... | 1,294  | Total value..... | \$122,219 |
| 1922..... | 3,320  |                  |           |

\* See under Marble

**SANDSTONE**

**Bibliography:** State Mineralogist Reports XII-XV, XVII, XVIII, XXI, XXIII, XXVI-XXVIII (inc.). Bulletin 38. U. S. Bur. of Mines, Bull. 124.

An unlimited amount of high-grade sandstone is available in California, but the wide use of concrete in buildings of every character, as well as the popularity of a lighter-colored building stone, has curtailed production in this branch of the mineral industry during recent years almost to the vanishing point. In 1934 a total of 21,738 cu. ft. of sandstone valued at \$14,245, was quarried in California and came from ten properties in Contra Costa, Los Angeles, Monterey, Napa, and San Luis Obispo counties; compared with 25,980 cu. ft. valued at \$10,888 for 1933.

Practically all of the material was flagstone which is used in garden walks, fountains, walls and fireplaces to give effect to Spanish and English types of homes. The material reported from Monterey and San Luis Obispo counties is in reality an indurated shale of the Monterey series, of a cream color and utilized as a building stone. Part of the material coming from Los Angeles County was schist and indurated shale.

A large portion of the sandstone was sold for landscape work and used as stepping stones for walks and for fountains, walls, etc.

**Sandstone Production of California, by Years.**

Amount and value, so far as contained in the records of this Bureau, are presented herewith, with total value from 1887 to date:

| Year | Cubic feet | Value     | Year        | Cubic feet | Value       |
|------|------------|-----------|-------------|------------|-------------|
| 1887 |            | \$175,000 | 1912        | 66,487     | \$22,574    |
| 1888 |            | 150,000   | 1913        | 62,227     | 27,870      |
| 1889 |            | 175,598   | 1914        | 111,691    | 45,322      |
| 1890 |            | 100,000   | 1915        | 63,350     | 8,438       |
| 1891 |            | 100,000   | 1916        | 17,270     | 10,271      |
| 1892 |            | 50,000    | 1917        | 31,090     | 7,074       |
| 1893 |            | 26,314    | 1918        | 900        | 400         |
| 1894 |            | 113,592   | 1919        | 5,400      | 3,720       |
| 1895 |            | 35,373    | 1920        | 10,500     | 2,300       |
| 1896 |            | 28,379    | 1921        | 10,150     | 2,112       |
| 1897 |            | 24,086    | 1922        | 900        | 1,100       |
| 1898 |            | 46,384    | 1923        | 7,000      | 13,000      |
| 1899 | 56,264     | 103,384   | 1924        | 6,700      | 3,600       |
| 1900 | 378,468    | 254,140   | 1925        | 14,704     | 14,362      |
| 1901 | 266,741    | 192,132   | 1926        | 34,100     | 17,500      |
| 1902 | 212,123    | 142,506   | 1927        | 22,900     | 205,400     |
| 1903 | 353,002    | 585,309   | 1928        | 134,100    | 43,250      |
| 1904 | 363,487    | 567,181   | 1929        | 177,655    | 49,881      |
| 1905 | 302,813    | 483,268   | 1930        | 160,704    | 56,404      |
| 1906 | 182,076    | 164,068   | 1931        | 110,244    | 30,960      |
| 1907 | 159,573    | 148,148   | 1932        | 41,793     | 13,286      |
| 1908 | 93,301     | 55,151    | 1933        | 25,980     | 10,888      |
| 1909 | 79,240     | 37,032    | 1934        | 21,738     | 14,245      |
| 1910 | 165,971    | 80,443    |             |            |             |
| 1911 | 255,313    | 127,314   | Total value |            | \$4,568,759 |

**SERPENTINE**

*Bibliography:* State Mineralogist Report XV. Bulletin 38.

Serpentine has not been produced in California to a very large extent at any time. A single deposit, that on Santa Catalina Island, has yielded the principal output to date. Some material was shipped from there in 1917 and 1918, being the only output recorded since 1907. It was used for decorative building purposes and for electrical switchboards. As there was but a single operator, the figures were combined with those of marble output for those years.

**Serpentine Production of California, by Years.**

The following table shows the amount and value of serpentine from 1895 as recorded by this bureau:

**Serpentine Production in California, by Years**

| Year | Cubic feet | Value   | Year   | Cubic feet   | Value        |
|------|------------|---------|--------|--------------|--------------|
| 1895 | 4,000      | \$4,000 | 1904   | 200          | \$2,310      |
| 1896 | 1,500      | 6,000   | 1905   |              |              |
| 1897 | 2,500      | 2,500   | 1906   | 847          | 1,694        |
| 1898 | 750        | 3,000   | 1907   | 1,000        | 3,000        |
| 1899 | 500        | 2,000   | 1917   | <sup>a</sup> | <sup>a</sup> |
| 1900 | 350        | 2,000   | 1918   | <sup>b</sup> | <sup>b</sup> |
| 1901 | 89         | 890     | 1919   |              |              |
| 1902 | 512        | 5,065   | Totals | 12,347       | \$33,259     |
| 1903 | 99         | 800     |        |              |              |

<sup>a</sup> Under 'Unapportioned.'

<sup>b</sup> See under Marble.

## SLATE

*Bibliography:* State Mineralogist Reports XV, XVIII, XXIV, XXVIII. Bulletin 38. U. S. Geol. Surv., Bull. 586. U. S. Bur. of Mines, Bull. 218.

Slate was first produced in California in 1889. Up to and including 1910 such production was continuous, but since then it has been irregular. Large deposits of excellent quality are known in the state, especially in El Dorado, Calaveras and Mariposa counties, but the demand has been light owing principally to competition of cheaper roofing materials.

The production of slate in California for 1934 amounted to 5065 short tons valued at \$24,245 f.o.b. rail-shipping point and came from a single property each in El Dorado, Inyo and Tuolumne counties. The 1934 figures showed a decrease in both amount and value from those of the previous year which was 5343 tons worth \$31,958. Practically all of this slate was crushed and used for roofing granules.

#### Total Production of Slate in California.

A complete record of amount and value of slate produced in California follows:

| Year      | Squares | Value    | Year             | Squares | Value     |
|-----------|---------|----------|------------------|---------|-----------|
| 1889..... | 4,500   | \$18,089 | 1909.....        | 6,961   | \$45,660  |
| 1890..... | 4,000   | 24,000   | 1910.....        | 1,000   | 8,000     |
| 1891..... | 4,000   | 24,000   | 1911.....        |         |           |
| 1892..... | 3,500   | 21,000   | 1915.....        | 1,000   | 5,000     |
| 1893..... | 3,000   | 21,000   | 1916.....        |         |           |
| 1894..... | 1,800   | 11,700   | 1920.....        | 8       | 80        |
| 1895..... | 1,350   | 9,450    | 1921.....        |         |           |
| 1896..... | 500     | 2,500    | 1922.....        | 200     | 2,400     |
| 1897..... | 400     | 2,800    | 1923.....        |         |           |
| 1898..... | 400     | 2,800    | 1926.....        |         | 7,371     |
| 1899..... | 810     | 5,900    | 1927.....        | 2,686   | 17,960    |
| 1900..... | 3,500   | 26,250   | 1928.....        | 4,075   | 31,263    |
| 1901..... | 5,100   | 38,250   | 1929.....        |         | 71,347    |
| 1902..... | 4,000   | 30,000   | 1930.....        | 6,220   |           |
| 1903..... | 10,000  | 70,000   | 1931.....        |         | 55,182    |
| 1904..... | 6,000   | 50,000   | 1932.....        | 6,234   |           |
| 1905..... | 4,000   | 40,000   | 1933.....        | 5,343   | 31,958    |
| 1906..... | 10,000  | 100,000  | 1934.....        | 5,065   | 24,245    |
| 1907..... | 7,000   | 60,000   |                  |         |           |
| 1908..... | 6,000   | 60,000   | Total value..... |         | \$923,205 |

- Annual details concealed under 'Unapportioned.'
- Quantity not shown as both 'squares' and 'tons' included.
- Tons.

#### MISCELLANEOUS STONE

*Bibliography:* State Mineralogist Reports XII-XXVIII (inc.). Bulletin 38; also annual statistical bulletins from 1915 to date.

'Miscellaneous stone' is the name used throughout this report as the title for that branch of the mineral industry covering crushed rock of all kinds, paving blocks, sand and gravel, and pebbles for grinding mills. The foregoing are very closely related from the standpoint of the producer; therefore it has been found to be most satisfactory to group these items as has been done in recent reports of this Bureau. So far as it has been possible to do so, crushed rock production has been subdivided into the various uses to which the product was put. It will be noted, however, a very large percentage of the output has been

tabulated under the heading 'Unclassified.' This is necessary because of the fact that many of the producers have no way of telling to what specific use their rock was put (or at least the proportions to each use) after they have quarried and sold the same to distributors and contractors.

In addition to amounts produced by commercial firms, both corporations and individuals, there is hardly a county in the State but uses more or less gravel and broken rocks on its roads. Of much of this, particularly in the country districts, there is no definite record kept.

During 1934 the output of sand and gravel showed an increase in both amount and value over that of the year 1933, while crushed rock showed a decrease. This resulted in a total value of \$7,131,330 for 'miscellaneous stone' during 1934 as compared with \$6,871,581 for 1933. As in the past several years Los Angeles County lead all others in the annual output of these products, its 1934 yield being worth \$1,220,639 (compared with \$1,841,946 in 1933); followed by Alameda County second with \$1,090,371; Contra Costa County third with \$408,412; followed in turn by Ventura, Napa, Sacramento, San Diego, San Benito, Santa Clara, and Mariposa counties.

#### **Paving Blocks.**

There was a small output of paving blocks in California during 1934 coming from a single property each in Napa and Sacramento counties. The annual details are concealed under the 'Unapportioned' item so as not to reveal production of either operator.

The paving block industry has decreased materially of recent years, practically to the vanishing point, because of the increased construction of smoother pavements demanded by motor vehicle traffic. The blocks made in Solano County were of basalt; those from Sonoma are of basalt, andesite, and some trachyte, while those from Madera, Placer, Riverside, San Bernardino, and San Diego are of granite; and those from San Mateo County a sandstone.

The amount and value of paving block production, annually, since 1887 has been as follows:

| Year | Amount<br>M | Value     | Year   | Amount<br>M | Value       |
|------|-------------|-----------|--------|-------------|-------------|
| 1887 | *10,000     | \$350,000 | 1912   | 11,018      | \$578,355   |
| 1888 | 10,500      | 367,500   | 1913   | 6,364       | 363,605     |
| 1889 | 7,303       | 297,236   | 1914   | 6,053       | 270,598     |
| 1890 | 7,000       | 245,000   | 1915   | 3,285       | 171,092     |
| 1891 | 5,000       | 150,000   | 1916   | 1,322       | 64,362      |
| 1892 | *5,000      | 95,000    | 1917   | 935         | 38,567      |
| 1893 | 2,770       | 96,950    | 1918   | 372         | 17,000      |
| 1894 | 2,517       | 66,981    | 1919   | 27          | 1,350       |
| 1895 | 2,332       | 73,338    | 1920   | 63          | 3,155       |
| 1896 | 4,161       | 77,554    | 1921   | 4           | 280         |
| 1897 | 1,711       | 35,235    | 1922   | 72          | 3,924       |
| 1898 | 1,144       | 21,725    | 1923   | 15          | 880         |
| 1899 | 305         | 7,961     | 1924   | 11          | 935         |
| 1900 | 1,192       | 23,775    | 1925   | 27          | 1,350       |
| 1901 | 1,920       | 41,075    | 1926   |             |             |
| 1902 | 3,502       | 112,437   | 1927   | 41          | 2,057       |
| 1903 | 4,854       | 134,642   | 1928   | 25          | 1,558       |
| 1904 | 3,977       | 161,752   | 1929   |             |             |
| 1905 | 3,406       | 134,347   | 1930   |             |             |
| 1906 | 4,203       | 173,432   | 1931   | 66          | 5,900       |
| 1907 | 4,604       | 199,347   | 1932   |             |             |
| 1908 | 7,640       | 334,780   | 1933   |             |             |
| 1909 | 4,503       | 199,803   | 1934   |             |             |
| 1910 | 4,434       | 198,916   |        |             |             |
| 1911 | 4,141       | 210,819   | Totals | 135,838     | \$5,325,503 |

\* Figures for 1887-1892 (inc.) are for Sonoma County only, as none are available for other counties during that period though Solano County quarries were then also quite active.

\* Annual details concealed under 'Unapportioned.'

#### Grinding-Mill Pebbles.

The 1934 output of grinding-mill pebbles in California is combined under the 'Unapportioned' item to conceal the production of a single operator each in San Diego and Siskiyou counties.

The amount and value of grinding-mill pebbles, annually, follows:

| Year   | Tons   | Value     |
|--------|--------|-----------|
| 1915   | 340    | \$2,810   |
| 1916   | 20,232 | 107,567   |
| 1917   | 21,450 | 90,538    |
| 1918   | 8,628  | 61,268    |
| 1919   | 2,607  | 19,272    |
| 1920   | 2,104  | 17,988    |
| 1921   | 247    | 1,418     |
| 1922   | 1,571  | 7,628     |
| 1923   | 2,650  | 14,936    |
| 1924   | 434    | 2,969     |
| 1925   | 215    | 1,385     |
| 1926   | 102    | 612       |
| 1927   | 288    | 1,800     |
| 1928   | 372    | 2,408     |
| 1929   | 166    | 1,225     |
| 1930   |        |           |
| 1931   |        |           |
| 1932   | 25     | 211       |
| 1933   |        |           |
| 1934   | 300    | 3,018     |
| Totals | 61,731 | \$267,053 |

\* Annual details concealed under 'Unapportioned.'

#### Sand and Gravel.

A considerable part of the gravel excavated is passed through grading and washing plants, and the material over 2 inches in size is crushed. Much of it is utilized in concrete mixtures. Most of the gravel used for road surfacing and repairs as well as that for railroad ballast is creek-

run or pit-run material which is spread upon the roads without undergoing any grading or washing.

The distribution of the 1934 output of sand and gravel by counties is given in the following table:

| County  | Tons              | Value              |
|---|-------------------|--------------------|
| Alameda   | 7,061,317         | \$948,845          |
| Amador  | 2,340             | 1,125              |
| Butte   | 32,426            | 22,634             |
| Calaveras   | 10,890            | 7,890              |
| Colusa  | 137,500           | 34,625             |
| Contra Costa  | 72,844            | 49,536             |
| Del Norte   | 1,656             | 914                |
| Glenn   | 61,321            | 30,608             |
| Humboldt  | 153,158           | 37,677             |
| Imperial  | 17,920            | 8,805              |
| Inyo  | 12,873            | 19,081             |
| Kern  | 74,866            | 41,913             |
| Kings   | 8,550             | 2,560              |
| Los Angeles   | 1,333,840         | 730,548            |
| Madera  | 1,913             | 4,100              |
| Marin   | 11,300            | 3,750              |
| Mariposa  | 5,144             | 3,241              |
| Mendocino   | 14,307            | 6,864              |
| Merced  | 17,000            | 8,100              |
| Modoc   | 13,725            | 5,150              |
| Mono  | 112,428           | 77,806             |
| Monterey  | 86,149            | 94,476             |
| Napa  | 6,705             | 2,340              |
| Nevada  | 2,500             | 625                |
| Orange  | 82,075            | 50,576             |
| Placer  | 13,567            | 5,477              |
| Riverside   | 140,592           | 84,688             |
| Sacramento  | 173,861           | 136,482            |
| San Bernardino  | 162,662           | 92,663             |
| San Diego   | 167,604           | 148,166            |
| San Joaquin   | 121,148           | 59,830             |
| San Luis Obispo   | 46,200            | 11,860             |
| Santa Barbara   | 60,512            | 51,602             |
| Santa Clara   | 325,546           | 94,148             |
| Santa Cruz  | 131,485           | 75,500             |
| Shasta  | 12,956            | 13,543             |
| Sierra  | 3,315             | 3,015              |
| Siskiyou  | 81,622            | 46,726             |
| Sonoma  | 252,252           | 93,265             |
| Stanislaus  | 65,113            | 43,249             |
| Tehama  | 22,603            | 14,637             |
| Trinity   | 8,637             | 7,793              |
| Tulare  | 84,849            | 45,337             |
| Tuolumne  | 3,252             | 1,833              |
| Ventura   | 248,820           | 177,767            |
| Yolo  | 65,500            | 26,050             |
| Yuba  | 74,061            | 31,099             |
| Alpine, El Dorado, Fresno, Lake, Lassen, Plumas, San Mateo,* Solano * | 106,283           | 78,266             |
| <b>Totals</b>   | <b>11,707,187</b> | <b>\$3,536,790</b> |

\* Combined to conceal the output of a single operator in each.

a Includes molding sand.

b Includes blast sand.

c Includes roofing granules.

d Includes filter sand.

e Includes a large amount of sand pumped from San Francisco Bay to make fill.

Included in the above is a total of 24,565 tons of molding sand valued at \$55,066 coming from two properties in Riverside County; and one each in Alameda, Contra Costa, Monterey, Sacramento, San Diego, San Luis Obispo, San Mateo, and Ventura counties. The 1934 yield showed an increase compared with 1933, which was 17,516 tons worth \$39,722.

#### Crushed Rock.

To list the kinds and varieties of rock utilized commercially under this heading would be to run almost the entire gamut of the classification scale. Much depends on the kind available in a given district.

Those which give the most satisfactory service are the basalts and other hard, dense, igneous rocks which break with sharp, clean edges. In many localities, river-wash boulders form an important source of such material. In such cases, combined crushing and washing plants obtain varying amounts of sand and gravel along with the crushed sizes. In Sacramento and Butte counties the tailings piles from the gold dredgers are the basis of like operations.

The values given are based on the selling price, f.o.b. cars, barges, or trucks, at the quarry.

## MINERAL PRODUCTION OF CALIFORNIA

Crushed Rock Production, by Counties, for 1934

| County         | Macadam and ballast |         | Rubble and riprap |          | Concrete |          | Unclassified |          | Totals  |           |
|----------------|---------------------|---------|-------------------|----------|----------|----------|--------------|----------|---------|-----------|
|                | Tons                | Value   | Tons              | Value    | Tons     | Value    | Tons         | Value    | Tons    | Value     |
|                |                     |         |                   |          |          |          |              |          |         |           |
| Alameda        | 4,093               | \$3,666 | 165,000           | \$40,000 | *        | *        | 87,455       | \$85,456 | 256,548 | \$129,122 |
| Alpine         | 17,875              | 9,384   |                   |          |          |          |              |          | 17,875  | 9,384     |
| Amador         | 20,594              | 10,990  |                   |          |          |          |              |          | 20,594  | 10,990    |
| Butte          | 38,389              | 25,099  |                   |          | 27,810   | \$25,095 | 17,042       | 8,143    | 55,421  | 33,237    |
| Calaveras      | 18,150              | 10,395  |                   |          |          |          |              |          | 18,150  | 10,395    |
| Contra Costa   | 100,578             | 63,225  | 50,099            | 43,735   | *        | *        | 254,054      | 195,293  | 404,751 | 302,236   |
| Del Norte      | 82,077              | 71,597  | 3,640             | 1,372    |          |          |              |          | 85,717  | 72,969    |
| El Dorado      | 1,965               | 4,700   | 250               | 1,200    |          |          |              |          | 2,215   | 5,900     |
| Humboldt       | 10,190              | 12,110  | 1,117             | 584      |          |          |              |          | 11,307  | 12,694    |
| Imperial       | 47,300              | 36,075  | 7,972             | 3,186    | *        | *        |              |          | 55,272  | 39,261    |
| Kern           | 5,630               | 4,250   |                   |          |          |          |              |          | 5,630   | 4,250     |
| Lake           | 24,450              | 24,450  |                   |          | 100      | 100      | 6,970        | 698      | 31,520  | 25,248    |
| Los Angeles    | 68,640              | 23,350  | 1,836             | 23,543   | 111,494  | 65,807   | 59,43,071    | 377,391  | 695,049 | 490,091   |
| Madera         | 37,290              | 47,970  | 1,823             | 1,520    |          |          |              |          | 39,113  | 49,490    |
| Marin          | *                   | *       | 45,752            | 60,044   | 48,807   | 47,807   | *            | *        | 94,559  | 107,651   |
| Mariposa       | 198,950             | 179,350 | 8                 | 10       | 346      | 277      | *            | *        | 199,117 | 179,519   |
| Mendocino      | 7,597               | 7,180   |                   |          |          |          |              |          | 7,597   | 7,180     |
| Merced         | 42,594              | 30,543  |                   |          |          |          |              |          | 42,594  | 30,543    |
| Modoc          | 36,800              | 36,000  |                   |          |          |          |              |          | 36,800  | 36,000    |
| Monterey       |                     |         |                   |          | 1,010    | 2,096    | *            | *        | 36,010  | 152,096   |
| Napa           | 141,074             | 154,412 | *                 | *        |          |          |              |          | 141,074 | 154,412   |
| Nevada         | 86,835              | 150,332 | 180               | 75       |          |          |              |          | 87,015  | 150,407   |
| Placer         | 8,000               | 4,198   |                   | 3,536    | 13,500   | 23,000   |              |          | 21,500  | 27,536    |
| Riverside      | 18,170              | 23,760  | 40,014            | 27,284   |          |          |              |          | 58,184  | 51,044    |
| Sacramento     | 43,172              | 27,988  | 4                 |          | 8,000    | 9,000    | 74,285       | 59,820   | 125,441 | 90,912    |
| San Benito     | *                   | *       | 514               | 780      | 2,800    | 1,677    | 614,520      | 3,630    | 125,441 | 90,912    |
| San Bernardino | 690                 | 660     | 75,485            | 50,345   |          |          |              |          | 76,175  | 51,005    |
| San Mateo      |                     |         | 12,000            | 7,250    | 1,706    | 3,157    | 2,100        | 2,375    | 15,806  | 12,785    |
| Santa Clara    | 126,000             | 63,000  |                   |          | 24,954   | 22,934   | 16,502       | 10,876   | 167,456 | 92,610    |
| Shasta         | 618,752             | 131,631 |                   |          |          |          | 3,793        | 1,890    | 100,545 | 133,527   |
| Sierra         | 10,310              | 10,950  | 150               | 75       |          |          |              |          | 10,460  | 11,025    |
| Sonoma         | 5,753               | 4,248   | 690               | 1,003    |          |          | *            | *        | 6,443   | 5,251     |
| Tehama         | 30,580              | 32,490  | 260               | 370      |          |          |              |          | 30,840  | 32,860    |
| Trinity        | 69,819              | 52,949  | 1,670             | 1,790    |          |          |              |          | 71,489  | 54,739    |
| Tulare         | 31,455              | 62,698  | 3,370             | 4,540    | 42,165   | 27,300   |              |          | 76,090  | 94,538    |
| Tuolumne       | 220                 | 635     | 689               | 3,110    |          |          |              |          | 909     | 3,745     |
| Ventura        |                     |         |                   |          | 126,615  | 114,078  |              |          | 126,615 | 114,078   |
| Yolo           |                     |         | 31,500            | 11,800   |          |          |              |          | 31,500  | 11,800    |



|   |           |             |         |           |           |           |             |  |  |  |           |             |
|---|-----------|-------------|---------|-----------|-----------|-----------|-------------|--|--|--|-----------|-------------|
| Marin, Orange <sup>b</sup> , San Benito, San Francisco, San Joa-                          | 463,392   | 279,619     | 111,070 | 102,476   |           |           |             |  |  |  | 463,392   | 279,619     |
| quin, San Mateo, Santa Cruz, Siskiyou <sup>a</sup>  |           |             |         |           |           |           |             |  |  |  | 111,070   | 102,476     |
| Napa, San Diego, Santa Cruz   |           |             |         |           |           |           |             |  |  |  |           |             |
| Alameda, Contra Costa, Kern, San Diego, San Francisco,                                    |           |             |         |           |           |           |             |  |  |  |           |             |
| Santa Cruz  |           |             |         |           | 173,623   | 187,386   |             |  |  |  | 173,623   | 187,386     |
| Calaveras <sup>a</sup> , Fresno, Inyo <sup>a</sup> , Kern, Marin, Mariposa <sup>a</sup> , |           |             |         |           |           |           |             |  |  |  |           |             |
| Monterey, Orange, Riverside, San Bernardino <sup>a</sup> , San                            |           |             |         |           |           |           |             |  |  |  |           |             |
| Joaquin, Santa Cruz, Solano, Sonoma, Stanislaus   |           |             |         |           |           |           |             |  |  |  | 354,065   | 341,448     |
| Totals.....   | 1,925,364 | \$1,588,016 | 559,289 | \$388,625 | \$529,873 | 1,373,846 | \$1,087,026 |  |  |  | 4,441,088 | \$3,594,540 |

\* Combined to conceal the output of operators in each.  
a Includes granules for roofing and terrazzo.  
b Includes decomposed granite.

**Miscellaneous Stone Production of California, by Years.**

The amount and value, annually, of crushed rock (including macadam, ballast, rubble, riprap, and that for concrete), and sand and gravel, since 1893, follow:

**Crushed Rock, Sand and Gravel, by Years**

| Year      | Tons      | Value     | Year        | Tons        | Value         |
|-----------|-----------|-----------|-------------|-------------|---------------|
| 1893..... | 371,100   | \$456,075 | 1915.....   | 10,879,497  | \$4,609,278   |
| 1894..... | 661,900   | 664,838   | 1916.....   | 9,951,089   | 4,009,590     |
| 1895..... | 1,254,688 | 1,095,939 | 1917.....   | 8,069,271   | 3,506,662     |
| 1896..... | 960,619   | 839,884   | 1918.....   | 6,641,144   | 3,325,889     |
| 1897..... | 821,123   | 600,112   | 1919.....   | 6,919,188   | 3,678,322     |
| 1898..... | 1,177,365 | 814,477   | 1920.....   | 9,792,122   | 6,782,414     |
| 1899..... | 964,898   | 786,892   | 1921.....   | 10,914,145  | 7,834,640     |
| 1900..... | 789,287   | 561,642   | 1922.....   | 13,049,644  | 10,366,231    |
| 1901..... | 530,396   | 641,037   | 1923.....   | 19,840,301  | 15,379,838    |
| 1902..... | 2,056,015 | 1,249,529 | 1924.....   | 21,451,129  | 15,962,476    |
| 1903..... | 2,215,625 | 1,673,591 | 1925.....   | 23,819,137  | 17,407,113    |
| 1904..... | 2,296,898 | 1,641,877 | 1926.....   | 24,987,606  | 19,859,261    |
| 1905..... | 2,621,257 | 1,716,770 | 1927.....   | 25,126,691  | 18,912,994    |
| 1906..... | 1,555,372 | 1,418,406 | 1928.....   | 27,471,794  | 17,328,044    |
| 1907..... | 2,288,888 | 1,915,015 | 1929.....   | 27,104,618  | 17,840,159    |
| 1908..... | 3,998,945 | 3,241,774 | 1930.....   | 23,514,168  | 16,430,027    |
| 1909..... | 5,531,561 | 2,708,326 | 1931.....   | 15,848,313  | 11,848,531    |
| 1910..... | 5,827,828 | 2,777,690 | 1932.....   | 11,361,564  | 7,183,643     |
| 1911..... | 6,487,323 | 3,610,357 | 1933.....   | 11,181,156  | 6,871,581     |
| 1912..... | 8,044,937 | 4,532,598 | 1934.....   | 16,148,275  | 7,131,330     |
| 1913..... | 9,817,616 | 4,823,056 |             |             |               |
| 1914..... | 9,288,397 | 3,960,973 | Totals..... | 373,635,790 | \$257,997,881 |

A comparison of the above table of annual production of these materials with the similar table for cement (see *ante*) reveals the fact that the important growth of the crushed rock and gravel business has been coincident with the rapid development of the cement industry from the year 1902.

## CHAPTER FIVE

## INDUSTRIAL MATERIALS

**Bibliography:** State Mineralogist Reports XII-XXX (inc.). Bulletin 38. Min. & Sci. Press, Vol. 114, March 10, 1917. Spurr and Wormser, "Marketing of Metals and Minerals," "Non-Metallic Minerals," by R. B. Ladoo. See also under each substance.

The following mineral substances have been arbitrarily arranged under the general heading of 'Industrial Materials,' as distinguished from those which have a clearly-defined classification, such as metals, salines, structural materials, etc.

These materials, many of which are mineral earths, are, with four or five exceptions, as yet produced on a comparatively small scale. The possibilities of development along several of these lines are large, and with increasing transportation and other facilities, together with steadily growing demands, the future for this branch of the mineral industry in California is promising. There is scarcely a county in the State but might contribute to the output.

Up to within the last few years, at least, production has been in the majority of instances dependent upon more or less of a strictly local market, and the annual tables show the results of such a condition, not only in the widely-varying amounts of a certain material produced from year to year, but in widely-varying prices of the same material.

The more important of these minerals thus far exploited, so far as shown by value of the output, are barytes, bentonite (fuller's earth), pottery clay, diatomite, dolomite, gypsum, limestone, mineral water, pumice and volcanic ash, pyrite, silica, and soapstone and talc.

To the industrial group were added during 1933, carbon dioxide gas, which is now being produced from wells in Imperial County and wollastonite, a mineral from which mineral-wool is made, coming from Kern County. Also fluorspar was again shipped, for the first time since 1918.

This group, as a whole, showed a decrease in total value from \$3,-658,249 in 1933 to \$4,276,566 in 1934.

The following table gives the comparative figures for the amounts and value of industrial minerals produced in California during the years 1933 and 1934:

| Substance                       | 1933             |             | 1934             |             | Increase+<br>Decrease-<br>Value |
|---------------------------------|------------------|-------------|------------------|-------------|---------------------------------|
|                                 | Amount           | Value       | Amount           | Value       |                                 |
| Barytes.....                    | 8,405 tons       | \$49,595    | 21,769 tons      | \$125,514   | \$75,919+                       |
| Bentonite (fuller's earth)..... | 4,605 tons       | 60,621      | 6,168 tons       | 69,325      | 8,704+                          |
| Clay (pottery).....             | 141,629 tons     | 211,711     | 190,510 tons     | 245,900     | 24,189+                         |
| Dolomite.....                   | 54,456 tons      | 176,575     |                  |             |                                 |
| Gems.....                       |                  | 690         |                  | 2,456       | 1,766+                          |
| Gypsum.....                     | 59,235 tons      | 120,451     | 58,149 tons      | 113,606     | 6,845-                          |
| Limestone.....                  | 207,371 tons     | 487,712     | 198,057 tons     | 461,139     | 26,573-                         |
| Mineral water.....              | 15,650,406 gals. | 719,746     | 19,882,436 gals. | 1,071,197   | 351,451+                        |
| Pumice and volcanic ash.....    | 8,243 tons       | 61,087      | 9,951 tons       | 54,248      | 6,839-                          |
| Silica.....                     | 70,329 tons      | 266,520     | 70,432 tons      | 296,643     | 30,123+                         |
| Soapstone and talc.....         | 14,450 tons      | 153,668     | 13,920 tons      | 158,606     | 4,938-                          |
| Sulphur.....                    |                  |             | 4,412 tons       | 67,656      | +                               |
| Unapportioned.....              |                  | \$1,349,873 |                  | \$1,610,276 | 260,403+                        |
| Total values.....               |                  | \$3,658,249 |                  | \$4,276,566 |                                 |
| Net increase.....               |                  |             |                  |             | \$618,317+                      |

\* Included under 'Unapportioned.'

\* Includes carbon dioxide, diatomite, feldspar, fluorspar, graphite, mica, mineral paint, pyrite, sillimanite-andalusite-cyanite group, sulphur, wollastonite.

<sup>b</sup> Includes asbestos, carbon dioxide, diatomite, dolomite, feldspar, fluorspar, pyrite, sillimanite-andalusite-cyanite group, wollastonite.

### ASBESTOS

*Bibliography:* State Mineralogist Reports XII-XIX (inc.), XXII, XXVII (inc.), XXIX. Bulletins 38, 91. Canadian Dept. of M., Mines Branch Bulletin 69. Min. and Sci. Press, April 10, 1920, pp. 531-533. Eng. & Min. Jour.-Press, Vol. 113, pp. 617-625, 670-677. Asbestology, Vol. 5, No. 7, July, 1927.

During 1934 there was a small output of asbestic reported in California, this material was used in roofing and plasters and came from Napa County. There was no production of asbestos in 1933. The annual figures are combined under the 'Unapportioned' item to conceal the output of a single operator.

### Asbestos Production of California, by Years.

Total amount and value of asbestos production in California since 1887, as given in the records of this Bureau, are as follows:

| Year      | Tons | Value   | Year        | Tons  | Value     |
|-----------|------|---------|-------------|-------|-----------|
| 1887..... | 30   | \$1,800 | 1912.....   | 90    | \$2,700   |
| 1888..... | 30   | 1,800   | 1913.....   | 47    | 1,175     |
| 1889..... | 30   | 1,800   | 1914.....   | 51    | 1,530     |
| 1890..... | 71   | 4,260   | 1915.....   | 143   | 2,860     |
| 1891..... | 66   | 3,960   | 1916.....   | 145   | 2,880     |
| 1892..... | 30   | 1,830   | 1917.....   | 136   | 10,226    |
| 1893..... | 50   | 2,500   | 1918.....   | 229   | 9,903     |
| 1894..... | 50   | 2,250   | 1919.....   | 131   | 6,340     |
| 1895..... | 25   | 1,000   | 1920.....   |       |           |
| 1896..... |      |         | 1921.....   | 410   | 19,275    |
| 1897..... |      |         | 1922.....   | 50    | 1,800     |
| 1898..... | 10   | 200     | 1923.....   | 20    | 200       |
| 1899..... | 30   | 750     | 1924.....   | 70    | 4,760     |
| 1900..... | 50   | 1,250   | 1925.....   | 25    | 1,650     |
| 1901..... | 110  | 4,400   | 1926.....   |       |           |
| 1902..... |      |         | 1927.....   |       |           |
| 1903..... |      |         | 1928.....   | 13    | 1,160     |
| 1904..... | 10   | 162     | 1929.....   |       |           |
| 1905..... | 112  | 2,625   | 1930.....   | 219   | 6,175     |
| 1906..... | 70   | 3,500   | 1931.....   |       |           |
| 1907..... | 70   | 3,500   | 1932.....   |       |           |
| 1908..... | 70   | 6,100   | 1933.....   | 309   | 3,274     |
| 1909..... | 65   | 6,500   | 1934.....   |       |           |
| 1910..... | 200  | 20,000  | Totals..... | 3,392 | \$145,084 |
| 1911..... | 125  | 500     |             |       |           |

\* Annual details concealed under 'Unapportioned.'

## BARYTES

**Bibliography:** State Mineralogist Reports XII, XIV, XV, XVII, XXI-XXVII (inc.). Bulletins 38, 87. Eng. & Min. Jour.-Press, Vol. 114, p. 109, July 15, 1922; Vol. 115, pp. 319-324, Feb. 17, 1923. U. S. Bureau of Mines, Inform. Circ. 6221, 6223.

During 1934 there was a commercial production of crude barytes in California amounting to a total of 21,769 short tons valued at \$125,514 f.o.b. rail-shipping point, as compared with the 1933 output of 8,405 tons worth \$49,595. The 1934 output came from Mariposa, Plumas, San Bernardino and Tulare counties with a single producer in each. This material was consumed in the manufacture of lithopone, in heavy-gravity oil-well drilling-mud, fillers, and barium chemicals.

The Tariff Act of 1930 placed a duty on foreign imported barytes ore, crude or unmanufactured, of \$4 per ton; ground or otherwise manufactured, of \$7.50 per ton.

Present quotations for barytes (93% BaSO<sub>4</sub>) vary from \$6 to \$7 (Calif. \$7) per ton, crude, f.o.b. rail-shipping point. Most baryte has to be washed and acid treated to remove iron stains or other impurities before being suitable for paint use.

Known occurrences of this mineral in California are located in Inyo, Los Angeles, Mariposa, Monterey, Nevada, San Bernardino, Shasta, Santa Barbara and Tulare counties. The deposits at El Portal, in Mariposa County, have given the largest commercial production to date, in part witherite (barium carbonate, BaCO<sub>3</sub>). Witherite has also been found in Shasta County, but no shipments have yet been made from the deposit.

#### Total Barytes Production of California.

The first recorded production of barytes in California, according to the statistical reports of the State Mining Bureau, was in 1910. The annual figures are as follows:

| Year      | Tons  | Value   | Year               | Tons           | Value            |
|-----------|-------|---------|--------------------|----------------|------------------|
| 1910..... | 860   | \$5,640 | 1924.....          |                |                  |
| 1911..... | 309   | 2,207   | 1925.....          |                |                  |
| 1912..... | 564   | 2,812   | 1926.....          | 4,978          | \$38,165         |
| 1913..... | 1,600 | 3,680   | 1927.....          | 17,993         | 90,617           |
| 1914..... | 2,000 | 3,000   | 1928.....          | 13,406         | 55,888           |
| 1915..... | 410   | 620     | 1929.....          | 26,796         | 168,839          |
| 1916..... | 1,606 | 5,516   | 1930.....          | 19,783         | 133,107          |
| 1917..... | 4,420 | 25,633  | 1931.....          | 27,832         | 156,647          |
| 1918..... | 100   | 1,500   | 1932.....          | 8,507          | 49,409           |
| 1919..... | 1,501 | 18,065  | 1933.....          | 8,406          | 49,595           |
| 1920..... | 3,029 | 20,795  | 1934.....          | 21,769         | 125,514          |
| 1921..... | 901   | 4,809   |                    |                |                  |
| 1922..... | 3,370 | 18,925  |                    |                |                  |
| 1923..... | 2,925 | 16,058  |                    |                |                  |
|           |       |         | <b>Totals.....</b> | <b>173,064</b> | <b>\$997,041</b> |

#### BENTONITE (Fuller's Earth)

**Bibliography:** State Mineralogist Reports XIV, XVII, XVIII, XXI, XXIII, XXV-XXVI (inc.). Bulletins 38, 91. U. S. Bureau of Mines, Bulletin 71. Eng. & Min. Jour.-Press, Vol. 121, pp. 837-842, May 22, 1926.

During 1934 there was produced and shipped in California 6,168 short tons of bentonite (fuller's earth) valued at \$69,325, coming from

seven properties, three of which were in San Bernardino County, two in Inyo County and one each in Kern and San Benito counties. The 1934 output showed an increase, as compared with that of 1933, which was 4,605 tons worth \$60,621.

Previous to 1931 the Division of Mines classed this material under the heading of 'fuller's earth,' but it was thought advisable to change the name to bentonite, owing to the fact that much bentonite is employed in uses that can not be classed as fuller's earth and therefore has been classified in these reports under pottery clay. This was somewhat confusing. Bentonite is the name commonly applied to the clays of the montmorillonite and halloysite group ('rock soap').

Fuller's earth includes many kinds of unctuous clays. It is usually soft, friable, earthy, nonplastic, white and gray to dark green in color, and some varieties disintegrate in water. Production has come mainly from Calaveras and Solano counties, with other deposits noted also in Riverside, Fresno, Inyo and Kern counties.

The Tariff Act of June 21, 1930, placed a duty of \$1.50 a ton on foreign produced imported fuller's earth.

#### Bentonite Production of California by Years.

Bentonite including a small amount of fuller's earth was first produced commercially in this state in 1899, and the total amount and value of the output since that time are as follows:

| Year      | Tons  | Value    | Year        | Tons    | Value       |
|-----------|-------|----------|-------------|---------|-------------|
| 1899..... | 620   | \$12,400 | 1918.....   | 37      | \$333       |
| 1900..... | 500   | 3,750    | 1919.....   | 385     | 3,810       |
| 1901..... | 1,000 | 19,500   | 1920.....   | 600     | 6,000       |
| 1902..... | 987   | 19,246   | 1921.....   | 1,185   | 8,295       |
| 1903..... | 250   | 4,750    | 1922.....   | 6,606   | 48,756      |
| 1904..... | 500   | 9,500    | 1923.....   | 3,650   | 55,125      |
| 1905..... | 1,344 | 38,000   | 1924.....   | 5,290   | 67,295      |
| 1906..... | 440   | 10,500   | 1925.....   | 5,280   | 91,842      |
| 1907..... | 100   | 1,000    | 1926.....   | 23,552  | 250,192     |
| 1908..... | 50    | 1,000    | 1927.....   | 13,018  | 154,764     |
| 1909..... | 459   | 7,385    | 1928.....   | 53,323  | 501,743     |
| 1910..... | 340   | 3,820    | 1929.....   | 15,541  | 170,563     |
| 1911..... | 466   | 5,294    | 1930.....   | 12,522  | 177,964     |
| 1912..... | 876   | 6,500    | 1931.....   | 13,960  | 222,583     |
| 1913..... | 460   | 3,700    | 1932.....   | 4,295   | 57,670      |
| 1914..... | 760   | 5,928    | 1933.....   | 4,605   | 60,621      |
| 1915..... | 692   | 4,002    | 1934.....   | 6,168   | 69,325      |
| 1916..... | 110   | 550      |             |         |             |
| 1917..... | 220   | 2,180    | Totals..... | 163,199 | \$1,441,797 |

#### CARBON DIOXIDE GAS

##### *Bibliography:* State Mineralogist Report XII.

Carbon dioxide gas was first produced commercially in California in 1894. This material came from a drift on the 575 level of the Santa Isabel shaft of the New Almaden Quicksilver Mine at Almaden, Santa Clara County. The drift was bulkheaded and a pipe was placed through the bulkhead for the gas to be drawn off, it then being compressed into cylinders and used in the manufacture of soda water.

In 1933 carbon dioxide gas was again produced, this time from wells drilled near Niland, Imperial County. On November 1, 1934, a dry-

ice plant was put into operation for condensation of the carbon dioxide produced from the above wells.

#### Carbon Dioxide Gas Production in California, by Years

| Year   | M cu. ft. | Value    |
|--------|-----------|----------|
| 1894   | 80        | \$4,072  |
| 1895   | 800       | 12,000   |
| 1896   | 81        | 1,300    |
| 1897   | ---       | ---      |
| 1933}  | *         | *        |
| 1934}  | ---       | ---      |
| Totals | 961       | \$17,372 |

\* Annual details concealed under 'Unapportioned'

#### CLAY (Pottery)

*Bibliography:* State Mineralogist Reports I, IV, IX, XII-XV, XVIII-XXVIII (inc.), XXX. Bulletins 38, 99. Preliminary Report No. 7. U. S. Bureau of Standards, Tech. Paper No. 262.

At one time or another in the history of the State, pottery clay has been mined in thirty-three of its counties. Of these, 17 contributed in 1934. In this report, 'pottery clay' refers to all clays used in the manufacture of red and brown earthenware, china and sanitary ware, flower pots, floor, faience and ornamental tiling, architectural terra cotta, sewer pipe, drain and roof tile, etc., and the figures for amount and value are relative to the crude material at the pit, without reference to whether the clay was sold in the crude form or was immediately used in the manufacture of any of the above finished products by the producer. It does not include clay used in making brick and hollow building blocks.

There are many other important uses for clay besides pottery manufacture. Among these may be enumerated paper, cotton goods, and chemicals. Clays of the montmorillonite and halloysite group ('rock soap') are being utilized successfully in the manufacture of soaps and for filtering oils and as oil-well drilling mud, also as an earth filler in irrigating ditches which run through porous ground.

During 1934 there was a total of 51 properties in 17 counties which reported an output of 190,510 tons of pottery clay having a total value of \$245,900 f.o.b. rail-shipping point for the crude material, as compared with 51 properties in 19 counties, producing 141,629 tons worth \$211,711 in 1933.

Because of the fact that a given product often requires a mixture of several different clays, and that these are not all found in the same pit, it is necessary for most clay-working plants to buy some part of their raw materials from other localities. For these reasons, in compiling the clay industry figures, much care is required to avoid duplications. So far as we have been able to segregate the figures, from the data sent in by the operatives, we have credited the clay output to the counties from which the raw material originated; and have deducted tonnages used in brick manufacture, as bricks are classified separately. herein.

A tabulation of the direct returns from the producers, by counties, for the year 1934 is shown herewith:

6-24511

## POTTERY CLAY IN 1934

| <i>County</i>   | <i>Tons</i>    | <i>Value</i>     | <i>Used in the manufacture of</i>   |
|---|----------------|------------------|---|
| Amador <sup>a</sup> -----   | 28,620         | \$50,833         | Architectural terra cotta; fire-clay products and refractories; chimney; drain and sewer pipe; floor, mantel and roofing tile; electrical porcelain and various.  |
| Kern -----  | 19,526         | 30,142           | Oil-well drilling-mud; fire-clay products and refractories; sanitary ware and electric porcelains and various.  |
| Los Angeles -----   | 13,763         | 7,772            | Architectural terra cotta; conduit and segment blocks; electrical porcelain and red earthenware; refractories; chimney, drain and sewer pipe; vents; floor, mantel and roofing tile; art pottery and various. |
| Orange -----  | 12,740         | 31,328           | Stoneware, refractories, vents; drain, floor and mantel tile and various.   |
| Placer -----  | 38,975         | 60,555           | Architectural terra cotta; chimney, drain and sewer pipe; faience, floor, mantel and roofing tile; red earthenware; electrical porcelain, sanitary ware and various.  |
| Riverside -----   | 16,081         | 35,101           | Conduit, sewer and drain pipe; red earthenware; faience, floor, mantel and roofing tile and various.  |
| Santa Clara -----   | 701            | 442              | Sewer pipe, art pottery; drain, floor, mantel and roofing tile; stoneware and various.  |
| San Bernardino -----  | 1,185          | 7,844            | Floor and roofing tile; stoneware, sanitary ware, art pottery, refractories and various.  |
| Alameda, Calaveras, Contra Costa, Fresno, Humboldt, Monterey, San Diego, Stanislaus, Ventura <sup>b</sup> * | 58,919         | 21,883           | Drain, roofing and mantel tile; saggers; electrical porcelain; refractory, red earthenware, garden furniture, oil-well drilling-mud and various.  |
| <b>Totals</b> -----   | <b>190,510</b> | <b>\$245,900</b> |   |

\* Combined to conceal the output of a single operator in each.

<sup>a</sup> Includes firesand.

<sup>b</sup> Includes clay and shale used for oil-well drilling-mud.

## POTTERY CLAY PRODUCTS

The values of the various pottery clay products made in California during 1934 totaled \$4,258,303, as compared with \$4,125,651, in 1933, their distribution being shown in the following tabulation:

| <i>Product</i>  | <i>Number of producers</i> | <i>Tons</i> | <i>Value</i>       |
|---|----------------------------|-------------|--------------------|
| Architectural terra cotta -----   | 5                          | 2,529       | \$304,135          |
| Chimney pipe and flue lining -----  | 7                          | 2,227       | 76,861             |
| Drain pipe -----  | 17                         | 3,509       | 48,440             |
| Roofing tile -----  | 21                         | 19,690      | 257,776            |
| Electrical porcelain -----  | 4                          | ---         | 177,913            |
| Red earthenware -----   | 7                          | ---         | 124,089            |
| Stoneware and chemical stoneware -----  | 6                          | ---         | 190,955            |
| Sanitary ware and plumbing fixtures -----   | 3                          | ---         | 629,839            |
| Floor, faience, mantel and hand-made tile -----   | 29                         | ---         | 753,405            |
| Conduit pipe -----  | 4                          | 2,307       | 54,723             |
| Ground fire clay and high temperature cement -----  | 8                          | 7,568       | 101,092            |
| Sewer pipe -----  | 6                          | 27,253      | 618,144            |
| Art pottery and chinaware -----   | 9                          | ---         | 737,026            |
| Miscellaneous: garden furniture, specialties, gas stove radiance, clay shapes, flower pots, light weight aggregate, floor cement, fire tile, sillimanite refractories, glazed tile, gas-house tank blocks, and molding clay ----- | 15                         | ---         | 183,905            |
| <b>Total value</b> -----  |                            |             | <b>\$4,258,303</b> |

Important increases were shown by drain pipe, red earthenware, conduit, ground fire clay and high temperature cement, sewer pipe,



art pottery and chinaware. All other groups showed a declined value from their 1933 total.



Architectural tile and porcelain from Californian clays, at Agua Caliente, Lower California, Mexico.

*Photo by Walter W. Bradley.*

#### Pottery Clay Production of California, by Years.

Amount and value of crude pottery clay output in California since 1887 are given in the following table:

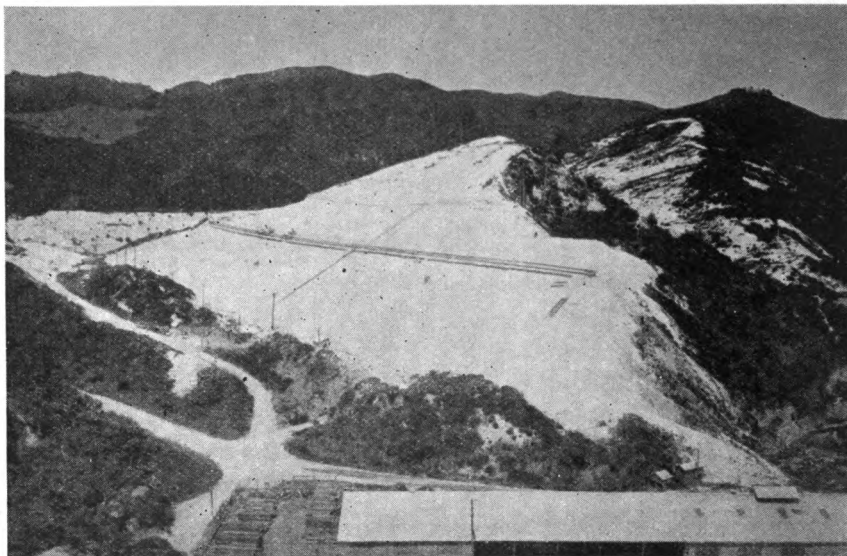
| Year | Tons    | Value    | Year   | Tons       | Value        |
|------|---------|----------|--------|------------|--------------|
| 1887 | 75,000  | \$37,500 | 1912   | 199,605    | \$215,683    |
| 1888 | 75,000  | 37,500   | 1913   | 231,179    | 261,273      |
| 1889 | 75,000  | 37,500   | 1914   | 179,948    | 167,552      |
| 1890 | 100,000 | 50,000   | 1915   | 157,866    | 133,724      |
| 1891 | 100,000 | 50,000   | 1916   | 134,636    | 146,638      |
| 1892 | 100,000 | 50,000   | 1917   | 166,298    | 154,602      |
| 1893 | 24,856  | 67,284   | 1918   | 112,423    | 166,788      |
| 1894 | 28,475  | 35,073   | 1919   | 135,708    | 245,019      |
| 1895 | 37,660  | 39,685   | 1920   | 203,997    | 440,689      |
| 1896 | 41,907  | 62,900   | 1921   | 225,120    | 362,172      |
| 1897 | 24,592  | 30,290   | 1922   | 277,232    | 473,184      |
| 1898 | 28,947  | 33,747   | 1923   | 376,863    | 697,841      |
| 1899 | 40,600  | 42,700   | 1924   | 417,928    | 651,857      |
| 1900 | 59,636  | 60,956   | 1925   | 537,587    | 674,376      |
| 1901 | 55,679  | 39,144   | 1926   | 801,461    | 806,509      |
| 1902 | 67,933  | 74,163   | 1927   | 867,419    | 872,661      |
| 1903 | 90,972  | 99,907   | 1928   | 887,807    | 1,394,970    |
| 1904 | 84,149  | 81,952   | 1929   | 839,949    | 1,127,527    |
| 1905 | 133,805 | 130,146  | 1930   | 938,586    | 795,517      |
| 1906 | 167,267 | 162,283  | 1931   | 332,680    | 408,931      |
| 1907 | 160,385 | 254,454  | 1932   | 167,284    | 204,90       |
| 1908 | 208,042 | 325,147  | 1933   | 141,629    | 211,711      |
| 1909 | 299,424 | 465,647  | 1934   | 190,510    | 245,900      |
| 1910 | 249,028 | 324,099  |        |            |              |
| 1911 | 224,576 | 252,759  |        |            |              |
|      |         |          | Totals | 11,076,648 | \$13,704,730 |

**DIATOMITE (Diatomaceous Earth)**

**Bibliography:** State Mineralogist Reports II, XII-XV (inc.), XVII-XXVIII (inc.), Bulletins 38, 67, 91. Am. Inst. Min. Eng., Bull. 104, August, 1915, pp. 1539-1550. U. S. Bur. of Mines, Rep. of Investigations: Serial No. 2431, Jan. 1923. Eng. & Min. Jour.-Press, Vol. 115, pp. 1152-1154, June 30, 1923.

Diatomite, also known as diatomaceous earth, infusorial earth, tripolite and kieselguhr, is very light (when dry a cubic foot weighs 18 to 20 pounds) and extremely porous, chalk-like materials composed of pure silica (chalk, being calcareous) which have been laid down under water and consist of the remains of microscopical infusoria and diatoms. The former are animal remains, and the latter are from plants.

The most important deposits in California thus far known are



Brick-cutting machine on diatomite deposit of Johns-Manville Company, Lompoc, Santa Barbara County.

*Photo by Walter W. Bradley.*

located in Monterey, Orange, San Luis Obispo, and Santa Barbara counties. The Santa Barbara material is diatomaceous and is of a superior quality, particularly for filtration uses which bring the higher prices. Infusorial or diatomaceous earths are also found in Fresno, Kern, Los Angeles, Plumas, San Benito, San Bernardino, San Joaquin, Shasta, Sonoma, and Tehama counties.

As about 60 per cent of the California output is from a single operator, we have concealed the exact figures under the 'Unapportioned' item in the State and county totals. There were six operators during 1934 in Fresno, Los Angeles, Monterey, Santa Barbara, and Stanislaus

counties. The shipments during the year showed an increase in total tonnage and value compared with 1933.

The material shipped was utilized for insulation of both heat and sound, filtration, paint, pigment, cement admixture, fillers, abrasives and for clarification of gasoline and kerosene.

#### Total Production of Dolomite in California.

The first recorded production of these materials in California occurred in 1889; total amount and value of output, to date, are as follows:

| Year      | Tons  | Value   | Year        | Tons      | Value        |
|-----------|-------|---------|-------------|-----------|--------------|
| 1889..... | 39    | \$1,335 | 1913.....   | 8,645     | \$35,968     |
| 1890..... |       |         | 1914.....   | 12,840    | 80,350       |
| 1891..... |       |         | 1915.....   | 12,400    | 62,000       |
| 1892..... |       |         | 1916.....   | 15,322    | 80,649       |
| 1893..... | 50    | 2,000   | 1917.....   | 24,301    | 127,510      |
| 1894..... | 51    | 2,040   | 1918.....   | 35,963    | 189,459      |
| 1895..... |       |         | 1919.....   | 40,200    | 217,800      |
| 1896..... |       |         | 1920.....   | 60,764    | 1,056,260    |
| 1897..... | 5     | 200     | 1921.....   | *90,739   | 1,016,675    |
| 1898..... |       |         | 1922.....   |           |              |
| 1899..... |       |         | 1923.....   |           |              |
| 1900..... |       |         | 1924.....   | *193,064  | 5,729,736    |
| 1901..... |       |         | 1925.....   |           |              |
| 1902..... | 422   | 2,532   | 1926.....   |           |              |
| 1903..... | 2,703 | 16,015  | 1927.....   | *275,403  | 1,995,923    |
| 1904..... | 6,950 | 112,282 | 1928.....   |           |              |
| 1905..... | 3,000 | 15,000  | 1929.....   |           |              |
| 1906..... | 2,430 | 14,400  | 1930.....   | *300,017  | 4,848,661    |
| 1907..... | 2,531 | 28,948  | 1931.....   |           |              |
| 1908..... | 2,950 | 32,012  | 1932.....   |           |              |
| 1909..... | 500   | 3,500   | 1933.....   | *203,228  | 3,104,154    |
| 1910..... | 1,843 | 17,617  | 1934.....   |           |              |
| 1911..... | 2,194 | 19,670  |             |           |              |
| 1912..... | 4,129 | 17,074  | Totals..... | 1,302,683 | \$18,827,770 |

\* Annual details concealed under 'Unapportioned.'

#### DOLOMITE

#### *Bibliography:* State Mineralogist Reports XV, XVII, XXVII, XXVIII.

The 1934 production came from one property each in Inyo and Monterey counties, the annual details are placed under the 'Unapportioned' item to conceal the output of either operator. The 1934 output showed a decrease from that of 1933 which was 54,456 tons worth \$176,575 coming from three properties in Inyo County and one property each in Los Angeles and Monterey counties. The material shipped was utilized for steel-furnace flux and refractories, plaster, stucco, dash-coat, terrazzo, art stone, and for manufacture of CO<sub>2</sub>.

#### Dolomite Production of California, by Years.

Previous to the 1915 statistical report of the State Mining Bureau, dolomite was included under limestone, as the two minerals are closely related chemically; but since dolomite, as such, has been found to have certain distinctive applications, we here give it a separate classification.

Amount and value of the output of dolomite, annually, have been as follows:

| Year        | Tons    | Value       |
|-------------|---------|-------------|
| 1915.....   | 4,192   | \$14,504    |
| 1916.....   | 13,313  | 46,566      |
| 1917.....   | 27,911  | 66,416      |
| 1918.....   | 24,560  | 79,441      |
| 1919.....   | 24,502  | 67,953      |
| 1920.....   | 42,388  | 132,791     |
| 1921.....   | 31,195  | 99,155      |
| 1922.....   | 52,409  | 114,911     |
| 1923.....   | 69,519  | 142,615     |
| 1924.....   | 28,843  | 71,271      |
| 1925.....   | 42,852  | 104,900     |
| 1926.....   | 68,640  | 119,313     |
| 1927.....   | 45,976  | 79,442      |
| 1928.....   | 38,379  | 85,242      |
| 1929.....   | 58,644  | 156,928     |
| 1930)*..... | 66,564  | 161,245     |
| 1931).....  | 35,275  | 40,956      |
| 1932.....   | 54,456  | 176,575     |
| 1933.....   | *       | *           |
| 1934.....   | *       | *           |
| Totals..... | 729,618 | \$1,760,324 |

\* Annual details concealed under 'Unapportioned.'

#### FELDSPAR

*Bibliography:* State Mineralogist Reports XV, XVII-XXVIII (inc.), XXX. Bulletins 67, 91. U. S. Bureau of Mines, Bulletin 92. Eng. & Min. Jour.-Press, Vol. 115, pp. 535-538, Mar. 24, 1923.

The 1934 feldspar production showed an increase in both amount and value over that of 1933 and is under the 'Unapportioned' item to conceal the output of a single operator in San Diego County. The 1933 and 1934 yield amounted to 2,655 short tons valued at \$30,611.

Total Feldspar Production in California.

Total amount and value of feldspar production in California since the inception of the industry are given in the following table, by years:

| Year      | Tons   | Value   | Year        | Tons    | Value     |
|-----------|--------|---------|-------------|---------|-----------|
| 1910..... | 760    | \$5,720 | 1924.....   | 9,055   | \$68,112  |
| 1911..... | 740    | 4,560   | 1925.....   | 8,165   | 59,615    |
| 1912..... | 1,382  | 6,180   | 1926.....   | 7,300   | 56,400    |
| 1913..... | 2,129  | 7,850   | 1927.....   | 10,932  | 86,101    |
| 1914..... | 3,530  | 16,565  | 1928.....   | 14,628  | 93,745    |
| 1915..... | 1,800  | 9,000   | 1929.....   | 13,327  | 78,404    |
| 1916..... | 2,630  | 14,350  | 1930.....   | 5,014   | 35,654    |
| 1917..... | 11,792 | 46,411  | 1931.....   | 4,795   | 59,921    |
| 1918..... | 4,132  | 22,061  | 1932.....   | 2,294   | 15,988    |
| 1919..... | 1,272  | 12,965  | 1933).....  | 2,655   | 30,611    |
| 1920..... | 4,518  | 26,189  | 1934).....  |         |           |
| 1921..... | 4,349  | 28,343  | Totals..... | 133,886 | \$903,649 |
| 1922..... | 4,587  | 37,109  |             |         |           |
| 1923..... | 11,100 | 81,800  |             |         |           |

\* Annual details concealed under 'Unapportioned.'

## FLUORSPAR

*Bibliography:* State Mineralogist Reports XVII, XVIII, XXIV, XXVI. Bulletins 67, 91. Eng. & Min. Jour.-Press, Vol. 177, pp. 489-492, Mar. 22, 1924.

During 1934 in California there was an output of fluorspar coming from San Bernardino County. The annual details are combined under the 'Unapportioned' item to conceal the output of a single operator. This material was shipped to steel mills to be used as a flux. The combined production of 1933 and 1934 amounted to a total of 227 tons worth \$3,631.

Fluorspar, or calcium fluoride,  $\text{CaF}_2$ , is one of the most important nonmetallic minerals from an industrial standpoint. About 80 per cent of the commercial mineral is prepared in the 'gravel' form and utilized as a flux in the manufacture of steel, for which use no substitute has yet been found.

The California deposits have been reported in Los Angeles, Mono, Riverside and San Bernardino counties. A previous commercial production was made in 1917-1918, when a total of 79 tons valued at \$991 was shipped from Riverside County.

Present quotations (Metal and Mineral Markets) are: not less than 85 per cent  $\text{CaF}_2$  and not over 5 per cent  $\text{SiO}_2$ , \$16 per ton; No. 2 lamp, \$17.50 per ton.

## GEMS

*Bibliography:* State Mineralogist Reports II, XIV, XV, XVII, XVIII, XX, XXI-XXVIII (inc.), XXX. Bulletins 37, 67, 91. U. S. G. S., 'Mineral Resources of the U. S.'; Bull. 603, p. 208. Bull. Dept. Geol. Univ. of Cal., Vol. 5, pp. 149-153, 331-380. Am. Jour. Sci., Vol. 31, p. 31.

The production of gem materials in California has been somewhat irregular and uncertain since 1911. The compilation of complete statistics is difficult owing to widely-scattered places at which stones are gathered and marketed, for the most part in a small way. The gem material reported in California during 1934 had a total value of \$2,456 in the rough. The 1934 output came from Amador, Butte, Fresno, Inyo, Kern, Mono, Riverside, San Bernardino, and Tulare counties and consisted of diamonds, topaz, beryl, mottled jasper, rose quartz, rutile, blue agate, onyx, and vesuvianite. The above showed an increased value over the 1933 output, which was worth \$690.

**Total Production of Gem Materials in California.**

The value of the gem output in California annually since the beginning of commercial production is as follows:

| Year | Value    | Year  | Value       |
|------|----------|-------|-------------|
| 1900 | \$20,500 | 1919  | \$5,425     |
| 1901 | 40,000   | 1920  | 38,058      |
| 1902 | 162,100  | 1921  | 10,954      |
| 1903 | 110,500  | 1922  | 1,312       |
| 1904 | 136,000  | 1923  | 13,220      |
| 1905 | 148,500  | 1924  | 4,800       |
| 1906 | 497,090  | 1925  | 10,663      |
| 1907 | 232,642  | 1926  | 9,049       |
| 1908 | 208,950  | 1927  | 7,035       |
| 1909 | 193,700  | 1928  | 22,200      |
| 1910 | 237,475  | 1929  | 26,850      |
| 1911 | 51,824   | 1930  | 3,540       |
| 1912 | 23,050   | 1931  | 5,607       |
| 1913 | 13,740   | 1932  | 4,961       |
| 1914 | 3,970    | 1933  | 690         |
| 1915 | 3,565    | 1934  | 2,456       |
| 1916 | 4,752    |       |             |
| 1917 | 3,049    | Total | \$2,256,875 |
| 1918 | 650      |       |             |

## GRAPHITE

*Bibliography:* State Mineralogist Reports XIII, XIV, XV, XVII, XXVI (inc.), XXX. Bulletins 67, 91. U. S. G. S., Min. Res., 1914, Pt. II.

Graphite (also called plumbago) has been produced from time to time in the State, coming principally from Sonoma and Los Angeles counties.

Occurrences of graphite has been reported at various times from Calaveras, Fresno, Imperial, Inyo, Los Angeles, Mendocino, San Bernardino, San Diego, Siskiyou, Sonoma and Tuolumne counties. From 1931 to 1933 there was a small production of graphite from a property in Los Angeles County. The annual details are concealed under 'Unapportioned,' owing to there having been but a single operator.

During 1934 there was no graphite produced in California.

## Graphite Production of California, by Years.

According to the records of the State Mining Bureau, the graphite production of California, by years, has been as follows:

| Year   | Pounds    | Value    |
|--------|-----------|----------|
| 1901   | 128,000   | \$4,480  |
| 1902   | 84,000    | 1,680    |
| 1903   |           |          |
| 1913   | 2,500     | 25       |
| 1914   |           |          |
| 1915   |           |          |
| 1916   | 29,190    | 2,335    |
| 1917   |           |          |
| 1918   |           |          |
| 1919   | *770,000  | 37,225   |
| 1920   |           |          |
| 1921   | *624,000  | 26,160   |
| 1922   |           |          |
| 1923   |           |          |
| 1925   |           |          |
| 1926   | *76,000   | 13,120   |
| 1927   |           |          |
| 1928   |           |          |
| 1931   |           |          |
| 1932   | 156,000   | 1,950    |
| 1933   |           |          |
| 1934   |           |          |
| Totals | 2,269,690 | \$86,975 |

\* Annual details concealed under 'Unapportioned,' on account of a single producer.

## GYPSUM

**Bibliography:** State Mineralogist Reports XIV, XV, XVII, XVIII, XXII, XXIII, XXV-XXVIII (inc.), XXX. Bulletins 38, 67, 91. U. S. Geol. Surv., Bull 223, 413, 430, 697. U. S. Bur. of Standards, Circular No. 281.

During the year 1934 there were shipments of gypsum in California amounting to 58,149 short tons valued at \$113,606, coming from two properties, each in Fresno and Riverside counties and a single property each in Imperial and Merced counties. This was a decrease in both quantity and value from the 1933 output, which was 59,235 tons worth \$120,451.

**Total Production of Gypsum in California.**

Production of gypsum annually in California since such records have been compiled by this Bureau is as follows:

| Year      | Tons   | Value    | Year        | Tons      | Value       |
|-----------|--------|----------|-------------|-----------|-------------|
| 1887..... | 2,700  | \$27,000 | 1912.....   | 37,529    | \$117,388   |
| 1888..... | 2,500  | 25,000   | 1913.....   | 47,100    | 135,050     |
| 1889..... | 3,000  | 30,000   | 1914.....   | 29,734    | 78,375      |
| 1890..... | 3,000  | 30,000   | 1915.....   | 20,200    | 48,953      |
| 1891..... | 2,000  | 20,000   | 1916.....   | 33,384    | 59,533      |
| 1892..... | 2,000  | 20,000   | 1917.....   | 30,825    | 56,840      |
| 1893..... | 1,620  | 14,280   | 1918.....   | 19,695    | 37,176      |
| 1894..... | 2,446  | 24,584   | 1919.....   | 19,813    | 50,579      |
| 1895..... | 5,158  | 51,014   | 1920.....   | 20,507    | 92,535      |
| 1896..... | 1,310  | 12,580   | 1921.....   | 37,412    | 78,875      |
| 1897..... | 2,200  | 19,250   | 1922.....   | 47,084    | 188,336     |
| 1898..... | 3,100  | 23,600   | 1923.....   | 86,410    | 289,136     |
| 1899..... | 3,663  | 14,950   | 1924.....   | 25,569    | 53,210      |
| 1900..... | 2,522  | 10,088   | 1925.....   | 107,613   | 172,444     |
| 1901..... | 3,875  | 38,750   | 1926.....   | 114,868   | 211,337     |
| 1902..... | 10,200 | 53,500   | 1927.....   | 94,630    | 292,090     |
| 1903..... | 6,914  | 46,441   | 1928.....   | 104,790   | 200,567     |
| 1904..... | 8,350  | 56,592   | 1929.....   | 140,844   | 396,951     |
| 1905..... | 12,859 | 54,500   | 1930.....   | 116,865   | 243,507     |
| 1906..... | 21,000 | 69,000   | 1931.....   | 88,354    | 199,198     |
| 1907..... | 8,900  | 57,700   | 1932.....   | 46,867    | 93,818      |
| 1908..... | 34,600 | 155,400  | 1933.....   | 59,235    | 120,451     |
| 1909..... | 30,700 | 138,176  | 1934.....   | 58,149    | 113,606     |
| 1910..... | 45,294 | 129,152  |             |           |             |
| 1911..... | 31,457 | 101,475  |             |           |             |
|           |        |          | Totals..... | 1,638,836 | \$4,552,987 |

## LIMESTONE

**Bibliography:** State Mineralogist Reports IV, XII-XV (inc.), XVII-XXX (inc.). Bulletins 38, 91. Oregon Agr. College Extension Bulletin 305. Eng. and Min. Jour.-Press, Vol. 120, pp. 249-253.

'Industrial' limestone was produced by 20 operators in 9 counties in California during 1934 to the amount of 198,057 short tons valued at \$461,139, as compared with the 1933 output, which was 207,371 tons worth \$487,712. The 1934 yield came from five properties in Santa Clara County; four in El Dorado County; two each in Fresno, San Bernardino, Santa Cruz, and Tuolumne counties; and one each in Alameda, San Mateo and Ventura counties.

The amount here given does not include the limestone used in the manufacture of cement nor for macadam and concrete, nor of lime for building purposes; but accounts for that utilized as a smelter and foundry flux, for glass and sugar making, and other special chemical

and manufacturing processes. It also includes that utilized for fertilizers (agricultural 'lime'), 'roofing gravel,' paint and concrete filler, whitening for paint, putty, kalsomine, terrazzo, paving dust, chicken grit, carbon dioxide gas, 'paving compound,' facing dust for concrete pipe, also for rubber and magnesite mix. The material from Fresno and Ventura counties and one operator in Santa Clara County was marl; and that from Alameda, San Mateo and three operators in Santa Clara counties was shells, dredged from San Francisco Bay, all of which was ground and used for agricultural purposes and poultry grit. Of the total 'industrial' limestone produced in 1934, approximately 52,571 short tons worth \$146,262 were used for agricultural purposes and poultry grit.

Distribution of the 1934 output of limestone was as follows:

| County  | Tons           | Value            |
|---|----------------|------------------|
| El Dorado   | 112,237        | \$152,422        |
| Santa Clara <sup>a b</sup>  | 26,809         | 84,033           |
| Alameda, <sup>b</sup> Fresno, <sup>a</sup> San Bernardino, San Mateo, <sup>a</sup> Santa Cruz, <sup>a</sup><br>Tuolumne, and Ventura <sup>a b</sup> | 59,011         | 224,684          |
| <b>Totals</b>   | <b>198,057</b> | <b>\$461,139</b> |

<sup>a</sup> Combined to conceal the output of individual operators in each.

<sup>a</sup> Includes marl.

<sup>b</sup> Includes shells.

#### Limestone Production of California, by Years.

The following tabulation gives the amounts and value of 'industrial' limestone produced in California by years since 1894 when compilation of such records was begun by the State Mining Bureau. These tonnages consist principally of limestone utilized for flux, glass and sugar making, agricultural, chemical, and other special industrial purposes. That utilized in cement manufacture is not included:

| Year | Tons    | Value    | Year          | Tons             | Value               |
|------|---------|----------|---------------|------------------|---------------------|
| 1894 | 15,420  | \$19,275 | 1916          | 187,521          | \$217,733           |
| 1895 | 71,355  | 71,690   | 1917          | 237,279          | 356,396             |
| 1896 | 65,184  | 71,112   | 1918          | 208,566          | 456,258             |
| 1897 | 36,796  | 38,556   | 1919          | 88,291           | 248,145             |
| 1898 | 27,686  | 24,848   | 1920          | 90,120           | 298,197             |
| 1899 | 30,769  | 29,185   | 1921          | 75,921           | 305,912             |
| 1900 | 32,791  | 31,532   | 1922          | 84,352           | 282,181             |
| 1901 | 76,937  | 99,445   | 1923          | 143,266          | 348,464             |
| 1902 | 71,422  | 90,524   | 1924          | 219,476          | 582,660             |
| 1903 | 125,919 | 163,988  | 1925          | 319,977          | 494,525             |
| 1904 | 40,207  | 87,207   | 1926          | 108,795          | 367,501             |
| 1905 | 192,749 | 323,325  | 1927          | 699,790          | 663,957             |
| 1906 | 80,262  | 162,827  | 1928          | 127,895          | 397,935             |
| 1907 | 230,965 | 406,041  | 1929          | 168,315          | 557,617             |
| 1908 | 273,890 | 297,264  | 1930          | 169,477          | 508,751             |
| 1909 | 337,676 | 419,921  | 1931          | 177,268          | 560,699             |
| 1910 | 684,635 | 581,208  | 1932          | 168,950          | 487,785             |
| 1911 | 516,398 | 452,790  | 1933          | 207,371          | 487,712             |
| 1912 | 613,576 | 570,248  | 1934          | 198,057          | 461,139             |
| 1913 | 301,918 | 274,455  |               |                  |                     |
| 1914 | 572,272 | 517,713  | <b>Totals</b> | <b>8,227,687</b> | <b>\$12,961,712</b> |
| 1915 | 146,324 | 156,288  |               |                  |                     |

#### LITHIA

*Bibliography:* State Mineralogist Reports II, IV, XIV, XXI, XXX. Bulletins 38, 67, 91.

Lithia mica, lepidolite (a silicate of lithium and others), utilized in the manufacture of artificial mineral water, fireworks, glass, etc., has



been mined in San Diego County since 1899, except between 1905 and 1915, though there was none shipped in 1923, 1925, 1929-1933 (inc.). During 1930 there was a small amount of lepidolite mined in California, but none shipped. Some amblygonite, a lithium phosphate, is occasionally also obtained from pockets associated with the gem tourmalines.

Lithia mica total production in the State has been as follows:

| Year      | Tons  | Value   | Year        | Tons   | Value     |
|-----------|-------|---------|-------------|--------|-----------|
| 1899..... | 124   | \$4,600 | 1920.....   | 10,046 | \$153,502 |
| 1900..... | 440   | 11,000  | 1921.....   | *1,365 | 20,781    |
| 1901..... | 1,100 | 27,500  | 1922.....   |        |           |
| 1902..... | 822   | 31,880  | 1923.....   |        |           |
| 1903..... | 700   | 27,300  | 1924.....   | 109    | 2,269     |
| 1904..... | 641   | 25,000  | 1925.....   |        |           |
| 1905..... | 25    | 276     | 1926.....   |        |           |
| 1906..... |       |         | 1927.....   | *550   | 13,900    |
| 1915..... | 91    | 1,385   | 1928.....   |        |           |
| 1916..... | 71    | 1,065   | 1929.....   |        |           |
| 1917..... | 880   | 8,800   |             |        |           |
| 1918..... | 4,111 | 73,998  | Totals..... | 21,875 | \$417,636 |
| 1919..... | 800   | 14,400  |             |        |           |

\* Annual details concealed under 'Unapportioned.'

### MICA

*Bibliography:* State Mineralogist Reports II, IV, XXVI-XXVIII (inc.), XXX. Bulletins 38, 67, 91. U. S. Geol. Surv., Bull. 740; Min. Res. of U. S. Eng. & Min. Jour.-Press, Vol. 115, pp. 55-60, Jan. 13, 1923.

Sericite, a fine-grained variety of muscovite, has been produced continuously since 1929 in California, though there was no production of mica during 1934. The 1933 output came from a single property in Imperial County. The annual details are concealed in the 'Unapportioned' item so as not to reveal production of the operator. This type of material is used as a cheap grade of ground mica for roofing as a refractory, foundry facing, and decorative material to imitate snow.

Production of mica in California has been as follows:

| Year        | Tons  | Value    |
|-------------|-------|----------|
| 1902.....   | 50    | \$2,500  |
| 1903.....   | 50    | 3,800    |
| 1904.....   | 50    | 3,000    |
| 1929.....   |       |          |
| 1930.....   | 2,240 | 15,260   |
| 1931.....   |       |          |
| 1932.....   |       |          |
| 1933.....   | 1,957 | 13,963   |
| 1934.....   |       |          |
| Totals..... | 4,347 | \$38,523 |

\* Annual details concealed under 'Unapportioned.'

### MINERAL PAINT

*Bibliography:* State Mineralogist Reports XII-XIX (inc.), XXI, XXII-XXVIII (inc.). Bulletins 38, 91.

During 1934 there was no production of mineral paint in California. In 1933 there was a small amount of mineral paint shipped from a single property in Alameda County, the detail of which was concealed under the 'Unapportioned' item.

These materials have come from Alameda, Amador, Butte, Calaveras, Colusa, Los Angeles, Napa, Nevada, Placer, Riverside, Shasta, Sonoma,

Stanislaus and Ventura counties. There are also other deposits that may have possible commercial value, but as yet there have been no commercial shipments from El Dorado, Imperial, Kern, Kings, Lake, Mendocino, San Diego, Siskiyou, Trinity and Yuba counties, in which they are found.

#### Mineral Paint Production of California, by Years.

The first recorded production of mineral paint materials in the State was in the year 1890. The output, showing annual amount and value since that time, is given herewith:

| Year | Tons  | Value  | Year   | Tons   | Value     |
|------|-------|--------|--------|--------|-----------|
| 1890 | 40    | \$480  | 1914   | 132    | \$847     |
| 1891 | 22    | 880    | 1915   | 311    | 1,756     |
| 1892 | 25    | 750    | 1916   | 643    | 3,960     |
| 1893 | 590   | 26,795 | 1917   | 520    | 2,700     |
| 1894 | 610   | 14,140 | 1918   | 728    | 4,728     |
| 1895 | 750   | 8,425  | 1919   | 1,780  | 17,055    |
| 1896 | 395   | 5,540  | 1920   | 779    | 8,477     |
| 1897 | 578   | 8,165  | 1921   | 446    | 4,748     |
| 1898 | 632   | 9,698  | 1922   | 1,620  | 13,277    |
| 1899 | 1,704 | 20,294 | 1923   | 1,049  | 11,773    |
| 1900 | 529   | 3,993  | 1924   | 532    | 5,234     |
| 1901 | 325   | 875    | 1925   | 669    | 8,969     |
| 1902 | 589   | 1,833  | 1926   | 569    | 5,546     |
| 1903 | 2,370 | 3,720  | 1927*  | 919    | 9,592     |
| 1904 | 270   | 1,965  | 1928/  | 467    | 2,820     |
| 1905 | 754   | 4,025  | 1929   | 250    | 3,000     |
| 1906 | 260   | 1,720  | 1930/  |        |           |
| 1907 | 260   | 1,720  | 1931/  |        |           |
| 1908 | 335   | 2,250  | 1932   |        |           |
| 1909 | 305   | 2,325  | 1933   |        |           |
| 1910 | 200   | 2,040  | 1934   |        |           |
| 1911 | 188   | 1,184  |        |        |           |
| 1912 | 300   | 1,800  |        |        |           |
| 1913 | 303   | 1,780  |        |        |           |
|      |       |        | Totals | 23,147 | \$222,098 |

\* Annual details concealed under 'Unapportioned.'

#### MINERAL WATER

**Bibliography:** State Mineralogist Reports VI, XII-XVIII (inc.), XXI-XXIX (inc.). U. S. G. S., Water Supply Paper 338. Min. Res., 1914, 1916. 'Mineral Springs and Health Resorts of California,' by Dr. Winslow Anderson, 1890. U. S. Dept. of Agr., Bur. of Chem., Bulletin 91.

A widespread production of mineral water is shown annually in California. These figures refer to mineral water actually bottled for sale, or for local consumption. Water from some of the springs having a special medicinal value brings a price many times higher than the average shown, while in some cases the water is used merely for drinking purposes and sells for a nominal figure. Health and pleasure resorts are located at many of the springs. The waters of some of the hot springs are not suitable for drinking, but are very efficacious for bathing. From a therapeutic standpoint, California is particularly rich in mineral springs.

The commercial production of mineral water in California during 1934 amounted to 19,882,436 gallons valued at \$1,071,197. This was an increase in both amount and value over the 1933 output which

was 15,650,406 gallons worth \$719,746. The 1934 output was distributed as follows:

| County   | Gallons    | Value       |
|--|------------|-------------|
| Lake .....   | 11,372     | \$11,005    |
| Los Angeles .....  | 8,202,017  | 479,710     |
| Napa .....   | 47,900     | 13,900      |
| Sonoma .....   | 12,944     | 2,786       |
| Butte, Calaveras, Colusa, Contra Costa, Marin, Orange,<br>Placer, Riverside, San Bernardino, San Diego, San Francisco,<br>San Luis Obispo, Santa Barbara, Siskiyou * | 11,608,203 | 563,796     |
| Totals .....   | 19,882,436 | \$1,071,197 |

\* Combined to conceal output of operators in each.

The production above tabulated either came from springs or artesian wells, and was bottled, in part with artificial carbonation, but mostly natural, and sold for drinking purposes. A large part was used in the preparation of soft drinks with flavors.

#### Mineral Water Production of California, by Years.

Mineral water was bottled for sale, at the Napa Soda Springs, Napa County, as early as 1856,<sup>1</sup> and at other springs in California, notably The Geysers, Sonoma County, also at early dates; but there are no figures available earlier than the year 1887. Amounts and values, annually, since that year are shown herewith:

| Year       | Gallons   | Value     | Year         | Gallons     | Value        |
|------------|-----------|-----------|--------------|-------------|--------------|
| 1887 ..... | 618,162   | \$144,368 | 1912 .....   | 2,497,794   | \$529,384    |
| 1888 ..... | 1,112,202 | 252,990   | 1913 .....   | 2,380,793   | 599,748      |
| 1889 ..... | 808,625   | 252,241   | 1914 .....   | 2,443,572   | 476,169      |
| 1890 ..... | 258,722   | 89,786    | 1915 .....   | 2,274,267   | 467,788      |
| 1891 ..... | 334,553   | 139,959   | 1916 .....   | 2,273,817   | 410,113      |
| 1892 ..... | 331,875   | 162,019   | 1917 .....   | 1,942,020   | 340,566      |
| 1893 ..... | 383,179   | 90,667    | 1918 .....   | 1,808,791   | 375,650      |
| 1894 ..... | 402,275   | 184,481   | 1919 .....   | 2,233,842   | 340,117      |
| 1895 ..... | 701,397   | 291,500   | 1920 .....   | 2,391,791   | 421,643      |
| 1896 ..... | 808,843   | 337,434   | 1921 .....   | 3,446,278   | 367,476      |
| 1897 ..... | 1,508,192 | 345,863   | 1922 .....   | 4,276,346   | 486,424      |
| 1898 ..... | 1,429,809 | 218,817   | 1923 .....   | 5,487,276   | 616,919      |
| 1899 ..... | 1,338,537 | 406,691   | 1924 .....   | 8,189,211   | 818,798      |
| 1900 ..... | 2,456,115 | 268,607   | 1925 .....   | 12,115,072  | 1,230,455    |
| 1901 ..... | 1,555,328 | 559,057   | 1926 .....   | 14,074,877  | 1,171,550    |
| 1902 ..... | 1,701,142 | 612,477   | 1927 .....   | 16,644,423  | 1,487,183    |
| 1903 ..... | 2,056,340 | 558,201   | 1928 .....   | 25,049,002  | 1,304,969    |
| 1904 ..... | 2,430,320 | 496,946   | 1929 .....   | 27,032,083  | 2,040,615    |
| 1905 ..... | 2,194,150 | 538,700   | 1930 .....   | 37,354,111  | 2,870,663    |
| 1906 ..... | 1,586,690 | 478,186   | 1931 .....   | 26,164,331  | 1,347,860    |
| 1907 ..... | 2,924,269 | 544,016   | 1932 .....   | 19,031,224  | 1,495,988    |
| 1908 ..... | 2,789,715 | 560,507   | 1933 .....   | 15,650,406  | 719,746      |
| 1909 ..... | 2,449,824 | 465,488   | 1934 .....   | 19,882,436  | 1,071,197    |
| 1910 ..... | 2,338,259 | \$22,009  |              |             |              |
| 1911 ..... | 2,637,669 | 590,654   | Totals ..... | 291,735,964 | \$30,187,561 |

<sup>1</sup> Cronise, T. F., The natural wealth of California, p. 182, 1868.

#### PHOSPHATES

*Bibliography:* State Mineralogist Report XXI. Bulletins 67, 91.

No commercial production of phosphates has been recorded from California, though occasional pockets of the lithium phosphate, amblygonite, Li (AlF) PO<sub>4</sub>, have been found associated with the gem tourmaline deposits in San Diego County. Such production has been classified under lithia.

**PUMICE and VOLCANIC ASH**

*Bibliography:* State Mineralogist Reports XII, XIV, XV, XVII, XVIII, XXII-XXVIII (inc.), XXX. Buletin 38. U. S. Bureau of Mines I. G. 6560. (See 'Tufa.')

The production of pumice and volcanic ash in California during the year 1934 amounted to 9951 short tons valued at \$54,248, coming from three properties in Inyo County and one each in Imperial, Kern, Madera, Mono, Napa, San Luis Obispo, and Siskiyou counties. The 1934 output showed an increase in quantity over that of 1933, which was 8,242 tons and a decrease in value, which was \$61,067. This is accounted for by the fact that the amount of lump pumice showed a decrease in amount while volcanic ash output showed a marked increase.

The material from one of the deposits in Inyo County and from Imperial, Mono, Napa, and Siskiyou counties was 2,566 tons of pumice and was used in acoustic plaster, light-weight aggregate in concrete, for abrasive purposes and for chicken-house litter. The product from two properties in Inyo and that from Kern, Madera and San Luis Obispo counties was 7,385 tons of volcanic ash or tuff variety and was employed in making soap, cleanser compounds, a large tonnage being utilized as a concrete filler in cement displacement, and in asphalt and as a carrier for dry agricultural sprays. The Kern County ash is going into the preparation of one of our popular and nationally advertised brands of cleanser compounds.

**Pumice Production of California, by Years.**

Commercial production of pumice in California was first reported to the State Mining Bureau in 1909, then not again until 1912, since which year there has been a small annual output, as indicated by the following table:

| Year      | Tons  | Value  | Year        | Tons    | Value       |
|-----------|-------|--------|-------------|---------|-------------|
| 1909..... | 50    | \$500  | 1923.....   | 2,936   | \$16,309    |
| 1910..... |       |        | 1924.....   | 4,919   | 33,404      |
| 1911..... |       |        | 1925.....   | 5,319   | 32,937      |
| 1912..... | 100   | 2,500  | 1926.....   | 7,170   | 48,360      |
| 1913..... | 3,590 | 4,500  | 1927.....   | 13,779  | 168,896     |
| 1914..... | 50    | 1,000  | 1928.....   | 10,440  | 105,055     |
| 1915..... | 380   | 6,400  | 1929.....   | 10,449  | 76,123      |
| 1916..... | 1,246 | 18,092 | 1930.....   | 12,947  | 128,847     |
| 1917..... | 525   | 5,295  | 1931.....   | 11,711  | 108,120     |
| 1918..... | 2,114 | 28,669 | 1932.....   | 9,891   | 86,084      |
| 1919..... | 2,388 | 43,657 | 1933.....   | 8,243   | 61,067      |
| 1920..... | 1,537 | 25,890 | 1934.....   | 9,951   | 54,748      |
| 1921..... | 406   | 6,310  |             |         |             |
| 1922..... | 613   | 4,248  | Totals..... | 120,754 | \$1,066,961 |

**PYRITES**

*Bibliography:* State Mineralogist Reports XVIII, XIX, XXII, XXV, XXVI, XXX. Bulletins 38, 91. Min. and Sci. Press, Vol. 144, pp. 825, 840.

During 1934 pyrite was shipped from a single property each in Alameda and Shasta counties. The annual details are placed in the 'Unapportioned' item to conceal the output of either operator. The 1934 production showed an increase in both quantity and value over that of 1933.

This material was mostly used in the manufacture of sulphuric acid for explosives and fertilizer. Some iron sulphate had been produced previously and was utilized directly in the preparation of an agricultural fertilizer and insecticide. The sulphur content ranged up to 50.8% S.

This does not include the large quantities of pyrite, chalcopyrite, and other sulphides which are otherwise treated for their valuable metal contents. Some sulphuric acid is annually made as a by-product in the course of roasting certain tonnages of Mother Lode auriferous concentrates while under treatment for their precious metal values.

#### Pyrites Production in California, by Years.

The total recorded pyrites production in California to date is as follows:

| Year | Tons    | Value     | Year   | Tons      | Value        |
|------|---------|-----------|--------|-----------|--------------|
| 1898 | 6,000   | \$30,000  | 1918   | 128,329   | \$425,012    |
| 1899 | 5,400   | 28,620    | 1919   | 147,024   | 540,300      |
| 1900 | 3,642   | 21,133    | 1920   | 146,001   | 530,581      |
| 1901 | 4,878   | 18,429    | 1921   | 110,025   | 473,735      |
| 1902 | 17,525  | 60,306    | 1922   | 151,381   | 570,425      |
| 1903 | 24,311  | 94,000    | 1923   | 148,004   | 555,308      |
| 1904 | 15,043  | 62,992    | 1924   | 124,214   | 517,835      |
| 1905 | 15,503  | 63,958    | 1925   | 129,500   | 528,560      |
| 1906 | 46,689  | 146,895   | 1926   | 100,896   | 466,068      |
| 1907 | 82,270  | 251,774   | 1927   | 130,910   | 564,823      |
| 1908 | 107,081 | 610,335   | 1928   | 90,566    | 400,637      |
| 1909 | 457,867 | 1,389,802 | 1929   | 79,169    | 363,717      |
| 1910 | 42,621  | 179,862   | 1930   | 39,958    | 194,228      |
| 1911 | 54,225  | 182,954   | 1931   | 25,402    | 131,174      |
| 1912 | 69,872  | 203,470   | 1932   | 72,271    | 297,832      |
| 1913 | 79,000  | 218,537   | 1933   | *         | *            |
| 1914 | 79,267  | 230,068   | 1934   | *         | *            |
| 1915 | 92,462  | 293,148   |        |           |              |
| 1916 | 120,525 | 372,969   | Totals | 3,057,856 | \$11,342,231 |
| 1917 | 111,325 | 323,704   |        |           |              |

\* Annual details concealed under 'Unapportioned'.

#### SHALE OIL

*Bibliography:* State Mineralogist Report XIX. U. S. Geol. Surv., Bulletins 322, 729. U. S. Bur. of Mines, Bull. 210. Eng. and Min. Jour.-Press, Vol. 118, No. 8, pp. 290-292, Aug. 23, 1924. Chem. & Met. Eng., Vol. 32, No. 6, Feb., 1925. Min. Congress Jour., Dec., 1924.

Two plants on a more or less experimental scale have operated in California, with commercial production beginning in a small way in 1922. The product, in part, was sold for utilization as a flotation oil in metallurgical work, and part consumed as fuel at the plants. There was no production reported for spring 1934.

#### Shale Oil Production of California, by Years

| Year   | Barrels | Value     |
|--------|---------|-----------|
| 1922}. |         |           |
| 1923}. | 4,333   | \$44,262  |
| 1924}. |         |           |
| 1925}. | 8,688   | 55,240    |
| 1926}. |         |           |
| 1927}. | 8,819   | 9,998     |
| 1928}. |         |           |
| Totals | 21,840  | \$109,500 |

\* Annual details concealed under 'Unapportioned'.

**SILICA (Sand and Quartz)**

*Bibliography:* State Mineralogist Reports IX, XIV, XV, XVII, XVIII, XX-XXVIII (inc.). Bulletins 38, 67, 91.

We combine these materials because of the overlapping roles of vein quartz which is mined for use in glass making and as an abrasive, and that of silica sand which, although mainly utilized in glass manufacture, also serves as an abrasive. Both varieties are also utilized to some extent in fire-brick manufacture.

We do not include under this heading such forms of silica as: quartzite, sandstone, flint, tripoli, diatomaceous earth, nor the gem forms of 'rock crystal,' amethyst, and opal. Each of these has various industrial uses, which are treated under their own designations.

The production of silica in California during 1934 amounted to 70,432 short tons valued at \$296,643 f.o.b. rail-shipping point, and came from two properties in Contra Costa County and one each in El Dorado, Monterey, Riverside and San Diego counties. The above was an increase in both amount and value as compared with the 1933 output, which was 70,329 tons worth \$266,520. The 1934 output consisted of 69,597 tons of glass sand and 835 tons of vein and boulder quartz. In addition to the above output for 1934 there were several thousand tons of quartzite shipped from San Bernardino County to be used in the manufacture of silica brick. To avoid duplication, its amount and value is not added to the silica totals.

The glass sand came from Contra Costa, Monterey and Riverside counties. For making the higher grades of glass, deposits in Contra Costa County are replacing the sand imported from Belgium. Belgium sand has displaced local material in the manufacture of sodium silicate ('water glass'). There are various deposits of quartz in California which could be utilized for glass making, but to date they have not been so used owing to the cost of grinding and the difficulty of preventing contamination by iron while grinding.

Silica sand has been produced in the following counties of the State: Alameda, Amador, Contra Costa, El Dorado, Imperial, Inyo, Los Angeles, Mariposa, Mono, Monterey, Orange, Placer, Riverside, San Diego, San Joaquin and Tulare, the chief centers being Contra Costa, Amador, Monterey and Los Angeles counties. The industry is of limited importance, so far, because of the fact that much of the available material is not of a grade which will produce first-class colorless glass; for such, it must be essentially iron-free. Even a fractional per cent of iron imparts a green color to the glass.

The Tariff Act of June 21, 1930, placed a duty on sand, containing 95 per cent or more of *Silica* and not more than six-tenths of 1 per cent of oxide of iron and suitable for use in the manufacture of glass, of \$2 per ton.

**Total Silica Production in California.**

Total silica production in California since the inception of the industry, in 1899, is shown below, being mainly sand:

| Year      | Tons   | Value   | Year               | Tons           | Value              |
|-----------|--------|---------|--------------------|----------------|--------------------|
| 1899..... | 3,000  | \$3,500 | 1918.....          | 23,257         | \$88,930           |
| 1900..... | 2,200  | 2,200   | 1919.....          | 18,659         | 101,600            |
| 1901..... | 5,000  | 16,250  | 1920.....          | 25,324         | 96,793             |
| 1902..... | 4,500  | 12,225  | 1921.....          | 10,569         | 49,179             |
| 1903..... | 7,725  | 7,525   | 1922.....          | 9,874          | 31,016             |
| 1904..... | 10,004 | 12,276  | 1923.....          | 7,964          | 30,420             |
| 1905..... | 9,257  | 8,121   | 1924.....          | 6,808          | 35,006             |
| 1906..... | 9,760  | 13,375  | 1925.....          | 12,498         | 96,780             |
| 1907..... | 11,065 | 8,178   | 1926.....          | 30,010         | 104,317            |
| 1908..... | 9,255  | 22,045  | 1927.....          | 24,636         | 94,762             |
| 1909..... | 12,259 | 25,517  | 1928.....          | 14,814         | 66,679             |
| 1910..... | 19,224 | 18,265  | 1929.....          | 18,686         | 79,210             |
| 1911..... | 8,620  | 8,672   | 1930.....          | 17,802         | 71,380             |
| 1912..... | 13,075 | 15,404  | 1931.....          | 43,330         | 182,769            |
| 1913..... | 18,618 | 21,899  | 1932.....          | 33,997         | 136,324            |
| 1914..... | 28,538 | 22,688  | 1933.....          | 70,329         | 266,520            |
| 1915..... | 28,904 | 34,322  | 1934.....          | 70,432         | 296,643            |
| 1916..... | 20,880 | 48,908  |                    |                |                    |
| 1917..... | 19,376 | 41,166  |                    |                |                    |
|           |        |         | <b>Totals.....</b> | <b>680,239</b> | <b>\$2,159,864</b> |

**SILLIMANITE-ANDALUSITE-CYANITE GROUP**

*Bibliography:* State Mineralogist Reports XX, XXIII, XXIV, XXVII. Bulletins 67, 91. Dana's Mineralogy. U. S. Geol. Surv., Prof. Paper 110. U. S. Bureau of Mines, Inform. Circ. 6255. Eng. & Min. Jour.-Press, Vol. 120, pp. 91-94, 1925. Amer. Mineralogist, June, 1924.

Sillimanite and andalusite are both aluminum silicates ( $\text{Al}_2\text{SiO}_5$ ), having the same composition and formula, but with slightly different physical characteristics. Though both crystallize in the orthorhombic system, their crystal habits are different. A massive deposit of andalusite, found in Dry Creek Canyon in the White Mountains of the Inyo Range, in Mono County, is being mined by the Champion Spark Plug Company of Detroit, Michigan. The material is shipped East and utilized in the manufacture of porcelain for automobile spark plugs, for other high-tension electric insulators, laboratory ware and porcelain. Porcelain made from these minerals can be subjected to sudden and extreme changes in temperature without damage.

Cyanite is also an aluminum silicate ( $\text{Al}_2\text{SiO}_5$ ), of the same chemical composition as andalusite and sillimanite, but crystallizing in the triclinic system. A deposit of cyanite is being mined in Imperial County, near Ogilby, by the Vitrefrax Corporation and shipments made to their refractory plant in Los Angeles.

Dumortierite, though different somewhat in composition from the above, being a basic aluminum silicate ( $\text{HAl}_3\text{BSi}_3\text{O}_{20}$ ), has proved similar in behavior in ceramic work so that it is now being mixed with andalusite for electrical porcelains. A deposit of this mineral in Nevada is being mined for that purpose. Occurrences of massive dumortierite are known in Imperial and San Diego counties in this State and there may yet be some commercial possibilities for them.

## Total Sillimanite Group Production of California, by Years

| Year           | Tons   | Value     |
|----------------|--------|-----------|
| 1923           |        |           |
| 1923 } • ----- | 4,584  | \$98,790  |
| 1924           |        |           |
| 1925 } • ----- | 4,810  | 203,000   |
| 1926           |        |           |
| 1927 } • ----- | 4,276  | 76,000    |
| 1928           |        |           |
| 1929 } • ----- | 4,359  | 198,893   |
| 1930           |        |           |
| 1931 } • ----- | 1,244  | 21,800    |
| 1932           |        |           |
| 1933 } • ----- | 3,035  | 69,026    |
| 1934           |        |           |
| Totals -----   | 22,308 | \$667,509 |

\* Annual details concealed under 'Unapportioned.'

## SOAPSTONE and TALC

*Bibliography:* State Mineralogist Reports XII, XIV, XV, XVII-XXVII (inc.), XXX. Bulletins 38, 67, 91. U. S. Bur. of Mines, Bulletin 213. Rep. of Investigations, Serial No. 2253, May 1921.

The total output of talc and soapstone in California during 1934 amounted to 13,920 tons valued at \$158,606. The 1934 figures showed a decrease in amount and an increased value as compared with those of 1933 which were 14,451 tons and \$153,668. This is accounted for by the fact that a larger amount of high-grade talc was mined and less soapstone. Of the 1934 production, 12,550 tons were high-grade talc from Inyo and San Bernardino counties; this material was utilized mainly in toilet powder, paint, paper and rubber manufacture, and in ceramics. The remainder of 1,370 tons was soapstone and came from Butte and El Dorado counties.

The 'soapstone' grades were used mainly for roofing granules and as a filler in roofing paper, and part also in magnesite cement.

It is reported that California talc has replaced to some extent imported talc in the toilet trade on the basis of quality. The largest production of talc in the United States comes from Vermont and New York, and of massive soapstone from Virginia.

During 1934 imports of talc, steatite, etc., totaled 22,921 short tons valued at \$368,014, as compared with 21,946 tons worth \$383,951 during 1933, according to the United States Bureau of Foreign and Domestic Commerce.

The Tariff Act of 1930 places a duty on talc, steatite or soapstone and French chalk, crude or unground, of one-fourth of one cent per pound.

## Talc Production of California, by Years.

Production was intermittent in the State up to 1912; but there has been a material growth since 1916, as shown in the following table:



| Year | Tons  | Value    | Year   | Tons    | Value       |
|------|-------|----------|--------|---------|-------------|
| 1893 | 400   | \$17,750 | 1915   | 1,663   | \$14,750    |
| 1894 |       |          | 1916   | 1,703   | 9,831       |
| 1895 | 25    | 375      | 1917   | 5,267   | 45,279      |
| 1896 |       |          | 1918   | 11,780  | 85,534      |
| 1897 |       |          | 1919   | 8,764   | 115,091     |
| 1898 |       |          | 1920   | 11,327  | 221,362     |
| 1899 |       |          | 1921   | 8,752   | 130,078     |
| 1900 |       |          | 1922   | 13,378  | 197,186     |
| 1901 | 10    | 119      | 1923   | 17,439  | 252,661     |
| 1902 | 14    | 288      | 1924   | 16,179  | 242,770     |
| 1903 | 219   | 10,124   | 1925   | 15,465  | 239,084     |
| 1904 | 228   | 2,315    | 1926   | 17,004  | 255,645     |
| 1905 | 300   | 3,000    | 1927   | 16,218  | 164,744     |
| 1906 |       |          | 1928   | 18,668  | 251,372     |
| 1907 |       |          | 1929   | 18,676  | 193,493     |
| 1908 | 3     | 48       | 1930   | 15,861  | 154,258     |
| 1909 | 33    | 280      | 1931   | 13,472  | 109,940     |
| 1910 | 740   | 7,260    | 1932   | 10,690  | 122,880     |
| 1911 |       |          | 1933   | 14,451  | 153,668     |
| 1912 | 1,750 | 7,350    | 1934   | 13,920  | 158,606     |
| 1913 | 1,350 | 6,150    |        |         |             |
| 1914 | 1,000 | 4,500    |        |         |             |
|      |       |          | Totals | 256,729 | \$3,177,791 |

## STRONTIUM

*Bibliography:* State Mineralogist Report XXVI, XXVII. Bulletins 67, 91. U. S. G. S., Bull. 540; 660-I.

There has been no production of strontium minerals in California since 1918, though in that year both celestite ( $\text{SrSO}_4$ ), and the carbonate, strontianite ( $\text{SrCO}_3$ ) were shipped. The first recorded commercial output of strontium minerals in California was in 1916. The occurrence of the carbonate is particularly interesting and valuable, as it appears to be the only considerable deposit of commercial importance so far opened up in the United States. Shipments reported as averaging 80%  $\text{SrCO}_3$  have been made. The deposit is associated with deposits of barite near Barstow, San Bernardino County. The carbonate has also been found in massive form near Shoshone, Inyo County. In addition to Imperial County, celestite is found near Calico and Ludlow, and in the Avawatz Mountains in San Bernardino County, but as yet undeveloped.

Production of strontium minerals in California, by years, has been as follows:

| Year   | Tons  | Value    |
|--------|-------|----------|
| 1916   | 57    | \$2,850  |
| 1917   | 3,050 | 37,000   |
| 1918   | 2,900 | 33,000   |
| 1919   |       |          |
| Totals | 6,007 | \$72,850 |

## SULPHUR

*Bibliography:* State Mineralogist Reports IV, XIII, XIV, XXV. Bulletins 38, 67, 91.

During 1934 there were shipments of sulphur in California amounting to 4,412 short tons valued at \$67,656, which came from two properties in Inyo County and one in Alpine County. The 1934 output of sulphur was the largest annual recorded in this state.

The 1929-1931 output, which came from Colusa County, and was utilized in the manufacture of a fertilizer and for dusting for mildew. These were the commercial operations of mining sulphur. The last previous production was in 1923 and 1924 and came from Kern County. This mineral has been found to some extent in Alpine, Colusa, Imperial, Inyo, Kern, Lake, Sonoma, Tehama, and Ventura counties.

#### Total Production of Sulphur in California.

Sulphur was produced at the famous Sulphur Bank mine in Lake County, during the years 1865-1868 (inc.); following which the property became more valuable for its quicksilver. The Elgin quicksilver mine, near Wilbur Springs, Colusa County, is a similar occurrence.

Production of sulphur in California to date:

| Year         | Tons  | Value     |
|--------------|-------|-----------|
| 1865 } *     | 941   | \$53,500  |
| 1866 } *     |       |           |
| 1867 } *     |       |           |
| 1868 to 1922 | ---   | ---       |
| 1923 } *     | 185   | 4,071     |
| 1924 } *     |       |           |
| 1925 to 1928 |       |           |
| 1929 } *     | 265   | 9,025     |
| 1930 } *     |       |           |
| 1931 } *     |       |           |
| 1932 } *     | 1,991 | 32,838    |
| 1933 } *     |       |           |
| 1934 } *     |       |           |
| Totals       | 7,794 | \$167,090 |

\* Annual details concealed under 'Unapportioned.'

#### WOLLASTONITE

Wollastonite was mined and shipped during 1934 in California from one property in Kern County. The annual details are concealed in the 'Unapportioned' item so as not to reveal the output of the single operator.

The first commercial production of wollastonite was made in 1933 from a deposit operated by John T. Thorndyke in the Radamacher District in Kern County, and was shipped from Cole's Siding to Los Angeles, where it is used to manufacture mineral wool. This is being done by a new process in an electric furnace where the material is melted without the use of a flux and then blown to a fine fiber or wool by compressed air from jets. The mineral wool is an excellent insulating material for sound, heat and cold, and the manufacturer expects to use large quantities in the proposed steel houses. This material, also, can be used in the manufacture of unbreakable glass. This is the first recorded commercial production of wollastonite in California, and apparently also the first in the United States.

Wollastonite is a calcium metasilicate ( $\text{CaSiO}_3$ ) and usually found in crystalline limestone at the contact with intrusive igneous rocks. It is a white to gray mineral, having a hardness of  $4\frac{1}{2}$  to 5 and a specific gravity of about 2.9.

## CHAPTER SIX

## SALINES

**Bibliography:** State Mineralogist Reports III, XIV, XV, XVII-XXIX (inc.). Bulletin 24. Spurr and Wormser, "Marketing of Minerals." "Non-Metallic Minerals," by R. B. Ladoo. See also under each substance.

Under this heading are included borax, common salt, soda, potash, and other alkaline salts. The first two have been produced in a number of localities in California, more or less regularly since the early sixties. Except for a single year's absence, soda has had a continuous production since 1894. Potash, magnesium chloride and sulphate, and calcium chloride have been added to the commercial list in recent years, joined in 1926 by bromide, and in 1931 by iodine. The nitrates are still prospective.

Our main resources of salines are the lake beds of the desert regions of Imperial, Inyo, Kern, Los Angeles, San Bernardino, and San Luis Obispo counties, and the waters of the Pacific Ocean.

The total value of this group showed an increase from \$8,652,224 in 1933 to \$10,413,019 in 1934. The following table gives details for the years 1933 and 1934:

| Substance             | 1933         |             | 1934         |              | Increase +<br>Decrease—<br>Value |
|-----------------------|--------------|-------------|--------------|--------------|----------------------------------|
|                       | Amount       | Value       | Amount       | Value        |                                  |
| Borates .....         | 197,495 tons | \$3,019,513 | 240,696 tons | \$5,524,262  | \$2,504,749 +                    |
| Iodine .....          |              |             | 355,279 lbs. | 423,016      | —                                |
| Magnesium salts ..... | 2,073 tons   | 159,660     | 2,325 tons   | 194,642      | 34,982 +                         |
| Salt .....            | 321,312 tons | 1,251,024   | 332,194 tons | 1,222,810    | 28,214 —                         |
| Soda .....            | 70,598 tons  | 1,019,130   | 99,380 tons  | 1,219,561    | 200,431 —                        |
| Unapportioned .....   |              | *3,202,897  |              | b1,828,728   | 1,374,169 —                      |
| Total values .....    |              | \$8,652,224 |              | \$10,413,019 |                                  |
| Net increase .....    |              |             |              |              | \$1,760,795 +                    |

\* Included under 'Unapportioned.'

• Includes bromine, calcium chloride, iodine and potash.

b Includes bromine, calcium chloride and potash.

## BORATES

**Bibliography:** State Mineralogist Reports III, X, XII-XV (inc.), XVII-XXIX (inc.), XXV-XXVII (inc.). Bulletins 24, 67, 91.

During the year 1934 there was produced in California a total of 240,732 short tons of borate materials, compared with 191,950 tons for 1933. The material shipped during the year included the new sodium borates, kernite (rasorite), kramerite from Kern County; also crystallized borax prepared by evaporation of brines at Searles Lake in San Bernardino County and Owens Lake in Inyo County.

As the crude ore is not sold as such, but is almost entirely calcined before shipping to the refinery for conversion into the borax of commerce, and because of the fact that the material varied widely in boric

acid content, we have recalculated the tonnage to a basis of 40 per cent, A. B. A. This is approximately the average A. B. A. content of the colemanite material after calcining, and also of the crystallized borax obtained from evaporation of the lake brines.

Recalculated as above, the 1934 production totaled 240,696 short tons valued at \$5,524,262. This was an increase in both quantity and value over the 1933 output, which was 197,495 tons worth \$3,019,513.

The total amount of borates exported from the United States<sup>1</sup> during the year 1934 was 103,643 short tons valued at \$2,997,276, as compared with 87,677 tons worth \$2,498,035 in 1933.

#### **Total Production of Borate Materials in California.**

Borax was first discovered in California in the waters of Tuscan Springs in Tehama County, January 8, 1856. Borax Lake in Lake County was discovered in September of the same year by Dr. John A. Veach. This deposit was worked in 1864-1868, inclusive, and during that time produced 1,181,365 pounds of refined borax. The bulk of it was exported by sea, to New York. This was the first commercial output of this salt in the United States, and California is still today the leading American producer of borax, having been for many years the sole producer.

Production from the dry lake 'playa' deposits of Inyo and San Bernardino counties began in 1873; but it was not until 1887 that the borax industry was revolutionized by the discovery of the colemanite beds at Calico, in San Bernardino County, and later similar beds in Inyo and Los Angeles counties. The colemanite deposits of Ventura County were not worked extensively, owing to lack of transportation facilities. Some production of colemanite has been made from deposits opened up in Clarke County, Nevada. Colemanite was in turn, displaced by the discovery in 1926 of kernite (rasorite) a sodium borate, near Kramer in Kern County.

The total production of borate materials in California is shown in the following table:

<sup>1</sup> Monthly Summary of Foreign Commerce of the United States, Department of Commerce, Dec., 1934.

## Total Production of Borate Materials in California

| Year | Tons   | Value     | Year        | Tons      | Value        |
|------|--------|-----------|-------------|-----------|--------------|
| 1864 | 12     | \$9,478   | 1901        | 22,221    | \$982,380    |
| 1865 | 126    | 94,099    | 1902        | 17,202    | 2,234,994    |
| 1866 | 201    | 132,538   | 1903        | 34,430    | 661,400      |
| 1867 | 220    | 156,137   | 1904        | 45,647    | 698,810      |
| 1868 | 32     | 22,384    | 1905        | 46,334    | 1,019,168    |
| 1869 |        |           | 1906        | 58,173    | 1,182,410    |
| 1870 |        |           | 1907        | 53,413    | 1,200,913    |
| 1871 |        |           | 1908        | 22,200    | 1,117,000    |
| 1872 | 140    | 89,600    | 1909        | 16,828    | 1,163,960    |
| 1873 | 515    | 255,440   | 1910        | 16,828    | 1,177,960    |
| 1874 | 915    | 259,427   | 1911        | 50,945    | 1,456,672    |
| 1875 | 1,168  | 289,080   | 1912        | 42,135    | 1,122,718    |
| 1876 | 1,437  | 312,537   | 1913        | 58,051    | 1,491,530    |
| 1877 | 993    | 193,705   | 1914        | 62,500    | 1,483,500    |
| 1878 | 373    | 66,257    | 1915        | 67,004    | 1,683,521    |
| 1879 | 364    | 65,443    | 1916        | 103,523   | 2,409,375    |
| 1880 | 609    | 149,245   | 1917        | 109,944   | 2,561,958    |
| 1881 | 690    | 189,750   | 1918        | 88,772    | 1,867,908    |
| 1882 | 732    | 201,300   | 1919        | 66,791    | 1,717,192    |
| 1883 | 900    | 285,500   | 1920        | 127,065   | 2,794,206    |
| 1884 | 1,019  | 198,705   | 1921        | 50,136    | 1,096,326    |
| 1885 | 942    | 155,430   | 1922        | 39,087    | 1,068,025    |
| 1886 | 1,285  | 173,475   | 1923        | 62,667    | 1,893,798    |
| 1887 | 1,015  | 116,689   | 1924        | 52,070    | 1,599,149    |
| 1888 | 1,405  | 196,636   | 1925        | 46,124    | 1,526,938    |
| 1889 | 965    | 145,473   | 1926        | 47,605    | 1,625,298    |
| 1890 | 3,201  | 480,152   | 1927        | 72,462    | 3,043,260    |
| 1891 | 4,267  | 640,000   | 1928        | 109,722   | 3,378,552    |
| 1892 | 5,525  | 838,787   | 1929        | 144,678   | 3,312,085    |
| 1893 | 3,955  | 593,292   | 1930        | 206,869   | 3,686,817    |
| 1894 | 5,770  | 807,807   | 1931        | 206,405   | 5,753,037    |
| 1895 | 5,959  | 595,900   | 1932        | 179,356   | 2,856,470    |
| 1896 | 6,754  | 675,400   | 1933        | 197,495   | 3,019,513    |
| 1897 | 8,000  | 1,080,000 | 1934        | 240,696   | 5,524,262    |
| 1898 | 8,300  | 1,153,000 |             |           |              |
| 1899 | 20,357 | 1,139,882 | Totals..... | 2,882,161 | \$82,146,889 |
| 1900 | 25,837 | 1,013,251 |             |           |              |

\* Refined borax.      \* Recalculated to 40% 'anhydrous boric acid' equivalent beginning with 1922.

## BROMINE

The first commercial production of bromine and bromine compounds was begun during 1926 by the California Chemical Corporation in its plant at Chula Vista, San Diego County, from salt works bittern waters. This same plant has been recovering magnesium chloride for a number of years. Bromine is also now being made at a similar bittern-water plant at Newark, Alameda County. The 1934 output was a marked increase over that of 1933, annual details of which are concealed under the 'Unapportioned' item to conceal the production of a single company which operated both plants.

The total commercial production of bromine in California is as follows:

| Year        | Tons  | Value     |
|-------------|-------|-----------|
| 1926        |       |           |
| 1927        |       |           |
| 1928        |       |           |
| 1929        |       |           |
| 1930        |       |           |
| 1931        |       |           |
| 1932        |       |           |
| 1933        |       |           |
| 1934        |       |           |
| Totals..... | 1,519 | \$819,960 |

\* Annual details concealed under 'Unapportioned.'

**CALCIUM CHLORIDE**

*Bibliography:* U. S. Geol. Surv., Min. Res. 1919, Pt. II. Engineering and Contracting, Roads and Streets, monthly issue, Feb. 6, 1924. 'How to Maintain Roads,' manual of instruction of Dow Chemical Company.

Calcium chloride is hygroscopic, that is, it has an affinity for water. This property is taken advantage of by utilizing this salt as a drying agent. During 1934 the production of calcium chloride in California came from two plants in San Bernardino County. The annual details are concealed under the 'Unapportioned' item to conceal the output of the operator.

**Total Calcium Chloride Production in California.**

Commercial production of calcium chloride in California was first reported to the State Mining Bureau in 1921, from two plants in San Bernardino County, being obtained as a by-product in the refining of salt from deposits in certain of the desert dry lakes. Total production in California is shown in the following tabulation:

| Year        | Tons   | Value       |
|-------------|--------|-------------|
| 1921.....   | 683    | \$22,980    |
| 1922.....   |        |             |
| 1923.....   | 1,204  | 26,580      |
| 1924.....   |        |             |
| 1925.....   | 10,988 | 328,876     |
| 1926.....   |        |             |
| 1927.....   | 34,195 | 508,748     |
| 1928.....   |        |             |
| 1929.....   | 12,020 | 114,080     |
| 1930.....   |        |             |
| 1931.....   | 9,688  | 103,237     |
| 1932.....   |        |             |
| 1933.....   | 3,103  | 15,500      |
| 1934.....   |        |             |
| Totals..... | 71,881 | \$1,120,001 |

\* Annual details concealed under 'Unapportioned.'

**IODINE**

*Bibliography:* U. S. Bureau of Mines I. C. 6387.

During 1934, in California, there were three plants producing iodine, all in Los Angeles County, with a total output of 355,279 pounds, valued at \$423,016. The 1934 production was a decrease in both amount and value from that of the previous year. The annual details for 1933 were concealed under the 'Unapportioned' item.

Iodine was first produced in California during 1917 to 1921 as a by-product of potash which was reduced from kelp in an experimental station of U. S. Department of Agriculture at Summerland, but after the armistice the demand for these minerals decreased so that the plants in Santa Barbara County closed. In 1929 the General Salt Company erected a plant which reduces iodine from the waste waters of certain deep oil wells in the Long Beach field. During 1933 two more plants started operation, making a total of three producing plants in the state.

The total production of 1929, 1931 and 1933 combined, in California was 696,297 pounds of iodine worth \$1,374,311.

## MAGNESIUM SALTS

**Bibliography:** State Mineralogist Reports XX, XXI, XXV-XXVI (inc.). Bulletin 91. 'Dictionary of Applied Chemistry,' by Thorpe. U. S. Geol. Surv., Min. Res. of P. S.

During 1934 there was an output of magnesium salts in California coming from one plant in San Diego County and two in San Mateo County, amounting to 2,325 short tons valued at \$194,642, and was the chloride and carbonate. The 1934 production was an increase over that of 1933, which amounted to 2,073 tons worth \$159,660. The chloride was nearly all sold for use in magnesite stucco and cement mixtures (Sorel cement), also some for road liquor. The carbonate, a bulky white powder, was used as a heat-insulating material, as a filler for rubber, paper, paint, etc., and in medicines, in tooth paste, in face powder and as a polish for metal and glass. The sulphate marketed was utilized for medicinal and bath purposes. The material coming from San Diego County was residual bitters from the salt plants and was in part marketed in the liquid form carrying from 35 per cent to 67 per cent  $MgCl_2$  and in part as dry crystals, while that from San Mateo County was magnesium carbonate.

The average value reported for the chloride produced in California in 1934 was approximately \$30 per ton, f.o.b. plant.

**Total Production of Magnesium Salts in California.**

Commercial production of magnesium chloride in California was begun in 1916 by some of the salt companies, from the residual bitters obtained during the evaporation of sea water for its sodium chloride. In addition, some magnesium sulphate, or 'epsom salts' is also made, annually, but in smaller amount, and magnesium carbonate by a patented process, direct from sea water.

The total production of magnesium salts in California, since the beginning of the industry here, is shown in the following tabulation:

| Year        | Tons   | Value       |
|-------------|--------|-------------|
| 1916.....   | 851    | \$6,407     |
| 1917.....   | 1,064  | 34,973      |
| 1918.....   | 1,008  | 29,955      |
| 1919.....   | 1,616  | 82,457      |
| 1920.....   | 3,150  | 107,787     |
| 1921.....   | 4,153  | 106,140     |
| 1922.....   | 3,036  | 89,788      |
| 1923.....   | 3,662  | 116,031     |
| 1924.....   | 4,823  | 145,883     |
| 1925.....   | 4,221  | 132,553     |
| 1926.....   | 4,881  | 124,470     |
| 1927.....   |        |             |
| 1928.....   | 6,241  | 139,589     |
| 1929.....   |        |             |
| 1930.....   | 4,914  | 333,906     |
| 1931.....   |        |             |
| 1932.....   | 2,749  | 217,979     |
| 1933.....   | 2,073  | 159,660     |
| 1934.....   | 2,325  | 194,642     |
| Totals..... | 50,767 | \$2,022,220 |

\* Annual details concealed under 'Unapportioned.'

## NITRATES

*Bibliography:* State Mineralogist Reports XV, XXV, XXVI, XXVII. Bulletins 24, 67, 91. U. S. G. S., Press Bulletin No. 373, July, 1918. Smithsonian Inst., Publ. No. 2421, 1916.

Nitrates of sodium, potassium and calcium have been found in various places in the desert regions of the State, but no deposit of commercial value has been developed as yet. It is hoped that a closer search may some day be rewarded by workable discoveries. At present the principal commercial source of nitrates is the Chilean saltpeter (sodium nitrate) deposits in South America.

The fixation of atmospheric nitrogen electrically has been accomplished successfully in Germany and Scandinavia. The possibilities of cheap hydroelectric power in California make the subject one of interest to us, as we have also the natural raw materials and chemicals to go with the power. Sodium and potassium cyanides can be made by fixation of atmospheric nitrogen electrically.

## POTASH

*Bibliography:* State Mineralogist Reports XV, XVIII, XX, XXII, XXV, XXVII (inc.). Bulletins 24, 67, 91. U. S. G. S., Min. Res. 1913, 1914, 1915. Senate Doc. No. 190, 62 Congress, 2d Session. Mining & Sci. Press, Vol. 112, p. 155; Vol. 114, p. 789. Eng. & Min. Jour.-Press, Vol. 117, p. 557, Apr. 5, 1924.

The 1934 production of potash in California came from a single operator in San Bernardino County, the details of which are concealed under the 'Unapportioned' item. This was principally chloride and the product averaged 60% equivalent  $K_2O$  content. The material was sold mainly for fertilizer manufacture.

Imports of crude potash minerals and salts into the United States during 1934, according to the U. S. Bureau of Foreign and Domestic Commerce, amounted to 413,897 long tons valued at \$8,840,784, compared with 406,015 long tons worth \$9,238,099 in 1933. These materials consisted mainly of 'manure salts,' crude chloride (muriate) and sulphate, and kainite, all of which are admitted duty free.

Quotations have recently ranged from \$35 per ton c.i.f. Atlantic and Gulf ports for high-grade sulphate (90%-95%), \$20.00 per ton for muriate (80%-85%), and \$12.50 for manure salts (30%).

## Total Production of Potash in California.

Potash production began commercially in California in 1914, with a small yield from kelp. The bulk of the output comes from deposits of potash-bearing residues and brines in the old lake beds of the desert regions, particularly Searles Lake, San Bernardino County. A small amount has been made from salt-works bitterns, and for a time there was some from Portland cement dust. Some also has been obtained from molasses distillery-slops char.



The annual amounts and value of these potash materials, since their beginning in California in 1914, have been as follows:

| Year   | Tons    | Value        |
|--------|---------|--------------|
| 1914   | 10      | \$460        |
| 1915   | 1076    | 19,391       |
| 1916   | 17,808  | 663,605      |
| 1917   | 129,022 | 4,202,889    |
| 1918   | 49,381  | 6,808,976    |
| 1919   | 28,118  | 2,415,963    |
| 1920   | 26,298  | 1,465,463    |
| 1921   | 14,806  | 390,210      |
| 1922   | 17,776  | 584,388      |
| 1923   | 29,597  | 709,836      |
| 1924   | 33,107  | 747,407      |
| 1925   | 36,355  | 829,770      |
| 1926   | 32,884  | 812,285      |
| 1927   | 67,340  | 1,952,852    |
| 1928   | 178,680 | 5,522,350    |
| 1929   |         |              |
| 1930   |         |              |
| 1931   |         |              |
| 1932   | 172,263 | 5,500,536    |
| 1933   | 153,147 | 3,932,721    |
| 1934   | *       | *            |
| Totals | 987,768 | \$36,565,102 |

\* Annual details concealed under 'Unapportioned.'

### SALT

**Bibliography:** State Mineralogist Reports II, XII-XV (inc.), XVII-XXIII (inc.), XXV-XXVII. Bulletins 24, 67, 91. U. S. Geol. Survey, Bull. 669. U. S. Bur. of Mines, Bull. 146.

Most of the salt production in California is obtained by evaporation of water of the Pacific Ocean, plants being located on the shores of San Francisco, Monterey, and San Diego bays, and at Long Beach. Additional amounts are derived from lakes and lake beds in the desert regions (in part, rock salt), mainly in Imperial, Kern, and San Bernardino counties, and evaporation of alkaline lake water in Modoc County. A small amount of valuable medicinal salts has been obtained by evaporation of the water of Lake Mono, Mono County.

During the year 1934, in California there was an output of 332,194 short tons of salt valued at \$1,222,810, compared with 321,312 tons worth \$1,251,024 in 1933. There were twelve plants operating in 1934, with two each in Alameda and San Bernardino counties, and one each in Imperial, Kern, Los Angeles, Modoc, Mono, Monterey, San Diego, and San Mateo counties.

The average value reported for salt produced in California during 1934 was \$3.68 per ton f.o.b plant, as compared with \$3.89 in 1933, \$3.58 in 1932, \$3.73 in 1931, and \$3.36 in 1930.

**Production of Salt in California, by Years.**

Amount and value of annual production of salt in California from 1887 is shown in the following tabulation:

| Year | Tons    | Value     | Year   | Tons      | Value        |
|------|---------|-----------|--------|-----------|--------------|
| 1887 | 28,000  | \$112,000 | 1912   | 185,721   | \$383,370    |
| 1888 | 30,800  | 92,400    | 1913   | 204,407   | 462,681      |
| 1889 | 21,000  | 63,000    | 1914   | 223,806   | 583,553      |
| 1890 | 8,729   | 57,085    | 1915   | 169,028   | 368,737      |
| 1891 | 20,094  | 90,303    | 1916   | 186,148   | 455,695      |
| 1892 | 23,570  | 104,788   | 1917   | 227,825   | 584,373      |
| 1893 | 50,500  | 213,000   | 1918   | 212,076   | 806,328      |
| 1894 | 49,131  | 140,087   | 1919   | 233,994   | 896,963      |
| 1895 | 53,031  | 150,576   | 1920   | 230,638   | 972,648      |
| 1896 | 64,743  | 153,244   | 1921   | 197,989   | 832,702      |
| 1897 | 67,851  | 157,520   | 1922   | 223,238   | 819,187      |
| 1898 | 93,421  | 170,855   | 1923   | 275,979   | 1,130,670    |
| 1899 | 82,654  | 149,588   | 1924   | 318,800   | 1,159,137    |
| 1900 | 89,338  | 204,754   | 1925   | 284,068   | 949,826      |
| 1901 | 126,218 | 366,376   | 1926   | 311,761   | 1,124,978    |
| 1902 | 115,208 | 305,876   | 1927   | 263,028   | 639,127      |
| 1903 | 102,895 | 211,365   | 1928   | 340,580   | 1,024,656    |
| 1904 | 95,968  | 187,300   | 1929   | 392,039   | 2,665,436    |
| 1905 | 77,118  | 141,925   | 1930   | 347,945   | 1,167,487    |
| 1906 | 101,650 | 213,228   | 1931   | 330,951   | 1,233,567    |
| 1907 | 88,063  | 310,967   | 1932   | 256,353   | 918,480      |
| 1908 | 121,764 | 281,469   | 1933   | 321,312   | 1,251,024    |
| 1909 | 155,680 | 414,708   | 1934   | 332,194   | 1,222,310    |
| 1910 | 174,920 | 395,417   |        |           |              |
| 1911 | 173,332 | 324,255   | Totals | 8,084,558 | \$26,565,521 |

**SODA**

*Bibliography:* State Mineralogist Reports XII, XIII, XV, XVII, XVIII, XXX, XXII, XXIII, XXV-XXIX (inc.). Bulletins 24, 67, 91. U. S. Geol. Surv., Bull. 717.

The production of sodium salts in California in 1934 included: Soda ash, trona, caustic soda and bicarbonate from plants at Owens Lake, Inyo County, and soda ash, salt cake and trona ('sesqui-carbonate,' a double salt of  $\text{Na}_2\text{CO}_3$  and  $\text{NaHCO}_3$ ) from Searles Lake, San Bernardino County. There were no shipments of salt cake (sulphate) from the Carrizo Plains, San Luis Obispo County. The output of the year amounted to 99,380 short tons valued at \$1,219,561, as compared with the 1933 figures, which were 58,017 tons and \$1,019,130.

The dense ash and bicarbonate were used mainly in the manufacture of soap, glass, paper, oil refining, sugar refining, and chemicals; and the trona for metallurgical purposes.

**Soda Production of California, by Years.**

The total output, showing amount and value of these materials in California since the inception of the statistical records of the State Mining Bureau, is given in the table which follows:

| Year | Tons   | Value    | Year   | Tons      | Value        |
|------|--------|----------|--------|-----------|--------------|
| 1894 | 1,530  | \$20,000 | 1916   | 10,593    | \$264,825    |
| 1895 | 1,900  | 47,500   | 1917   | 24,505    | 928,578      |
| 1896 | 3,000  | 65,000   | 1918   | 20,447    | 855,423      |
| 1897 | 5,000  | 110,000  | 1919   | 21,294    | 721,958      |
| 1898 | 7,000  | 154,000  | 1920   | 32,407    | 1,164,898    |
| 1899 | 10,000 | 250,000  | 1921   | 14,828    | 438,996      |
| 1900 | 1,000  | 50,000   | 1922   | 20,084    | 573,661      |
| 1901 | 8,000  | 400,000  | 1923   | 34,885    | 764,284      |
| 1902 | 7,000  | 50,000   | 1924   | 32,536    | 711,796      |
| 1903 | 18,000 | 27,000   | 1925   | 48,625    | 947,649      |
| 1904 | 12,000 | 18,000   | 1926   | 63,333    | 1,305,802    |
| 1905 | 15,000 | 22,500   | 1927   | 62,571    | 1,478,239    |
| 1906 | 12,000 | 18,000   | 1928   | 80,838    | 1,469,297    |
| 1907 |        |          | 1929   | 90,646    | 1,838,657    |
| 1908 | 9,600  | 14,400   | 1930   | 90,122    | 1,627,344    |
| 1909 | 7,712  | 11,593   | 1931   | 78,701    | 1,217,811    |
| 1910 | 8,125  | 11,862   | 1932   | 58,017    | 826,369      |
| 1911 | 9,023  | 52,887   | 1933   | 70,598    | 1,019,130    |
| 1912 | 7,200  | 37,094   | 1934   | 99,380    | 1,219,561    |
| 1913 | 1,861  | 24,936   |        |           |              |
| 1914 | 6,522  | 115,396  |        |           |              |
| 1915 | 5,799  | 83,485   | Totals | 1,211,682 | \$20,957,931 |

## CHAPTER SEVEN

## BY COUNTIES

**Introductory.**

The State of California includes a total area of 158,297 square miles, of which 155,652 square miles are of land. The maximum width is 235 miles, the minimum 148 miles, and the length from the northwest corner to the southeast corner is 775 miles. The State is divided into fifty-eight counties. The 1930 census figures show a total population for California of 5,672,009. Minerals of commercial value exist in every county, and during 1934 some active production was reported to the State Division of Mines from all of the fifty-eight.

**Rank of Counties in Mineral Yield, 1934.**

Of the ten leading counties in point of total value of output for 1934, the first five, viz., Los Angeles, Kern, Kings, Orange and Ventura, also Santa Barbara (seventh) and Fresno (ninth) owe their position to petroleum and natural gas. Los Angeles, due to crude oil, leads all other counties. In 1934 it was credited with 28% of the State's total value, having passed Kern in 1923, which led the State for many years. San Bernardino (sixth) owes its position to cement, borates, and potash; Nevada (eighth), and Sacramento (tenth) to gold.

There were twenty-three counties each having a mineral production in excess of a million dollars during 1934. Petroleum was an important item in seven; gold in eight; natural gas in six; cement in five; borates and miscellaneous stone in two each; and potash in one. In point of variety and diversion, San Bernardino County led all others in 1934, with a total of twenty-five different products on the commercial list, followed by Kern with nineteen; Inyo with seventeen; Los Angeles with sixteen;; Fresno and San Diego with fifteen each; Riverside with fourteen; Monterey with thirteen; Butte, El Dorado, Placer, San Luis Obispo, and Tulare with eleven each; and Alameda, Amador, Imperial, Mono, Sacramento, Santa Cruz, and Ventura with ten each.

| <i>County</i>       | <i>Value</i>  |
|---------------------|---------------|
| 1. Los Angeles      | \$66,359,227  |
| 2. Kern             | 37,053,187    |
| 3. Kings            | 28,067,389    |
| 4. Orange           | 25,746,031    |
| 5. Ventura          | 13,688,749    |
| 6. San Bernardino   | 10,537,050    |
| 7. Santa Barbara    | 7,570,191     |
| 8. Nevada           | 7,488,996     |
| 9. Fresno           | 5,772,807     |
| 10. Sacramento      | 3,877,757     |
| 11. Riverside       | 2,590,545     |
| 12. Amador          | 2,400,161     |
| 13. Alameda         | 2,379,633     |
| 14. Calaveras       | 2,196,592     |
| 15. Yuba            | 1,951,046     |
| 16. Santa Cruz      | 1,796,844     |
| 17. El Dorado       | 1,738,576     |
| 18. Contra Costa    | 1,734,999     |
| 19. San Mateo       | 1,562,490     |
| 20. Inyo            | 1,293,725     |
| 21. Shasta          | 1,145,180     |
| 22. Merced          | 1,050,492     |
| 23. Sierra          | 1,046,307     |
| 24. Mariposa        | 807,908       |
| 25. Placer          | 678,232       |
| 26. Trinity         | 650,620       |
| 27. Siskiyou        | 648,166       |
| 28. Butte           | 637,962       |
| 29. San Diego       | 487,266       |
| 30. Tuolumne        | 423,588       |
| 31. Stanislaus      | 418,172       |
| 32. Napa            | 398,214       |
| 33. Santa Clara     | 386,445       |
| 34. San Benito      | 266,857       |
| 35. Madera          | 264,142       |
| 36. Lake            | 260,481       |
| 37. Mono            | 212,438       |
| 38. Monterey        | 190,902       |
| 39. Tulare          | 184,474       |
| 40. Marin           | 183,354       |
| 41. Plumas          | 181,143       |
| 42. Sonoma          | 162,005       |
| 43. San Joaquin     | 148,097       |
| 44. San Luis Obispo | 138,453       |
| 45. Imperial        | 108,480       |
| 46. Del Norte       | 81,998        |
| 47. Humboldt        | 81,432        |
| 48. Colusa          | 45,875        |
| 49. Modoc           | 48,117        |
| 50. Tehama          | 39,575        |
| 51. Yolo            | 38,027        |
| 52. Glenn           | 30,608        |
| 53. San Francisco   | 28,641        |
| 54. Lassen          | 28,318        |
| 55. Alpine          | 25,431        |
| 56. Solano          | 23,641        |
| 57. Mendocino       | 14,351        |
| 58. Sutter          | 3,322         |
| Total               | \$237,374,709 |

## ALAMEDA

*Land area:* 732 square miles.

*Population:* 475,153 (1930 census).

*Location:* East side of San Francisco Bay.

*County seat:* Oakland.

*References:* State Mineralogist Report XVII: XVIII: XX: XXVI (Oct. 1929).

Alameda County, while in no sense one of the 'mining counties,' came thirteenth on the list of counties as to value, with a mineral production for 1934 worth \$2,379,633, and having ten different substances. This was an increase over the 1933 output, which was valued at \$1,930,111.

Commercial production for 1934 was as follows:

| <i>Substance</i>                    | <i>Value</i>       |
|-------------------------------------|--------------------|
| Brick and hollow building tile----- | \$192,527          |
| Stone, miscellaneous-----           | 1,090,371          |
| Other minerals*-----                | 1,096,735          |
| <b>Total value-----</b>             | <b>\$2,379,633</b> |

\* Includes clay (pottery), bromine, lime, limestone (shells), pyrite, salt.

### ALPINE

*Land area:* 776 square miles.

*Population:* 236 (1930 census).

*Location:* On eastern border of State, south of Lake Tahoe.

*County seat:* Markleeville.

*References:* State Mineralogist Report XV:XVII:XVIII:XXVII  
(Oct., 1931).

Alpine County ranked fifty-fifth in value of output for 1934, which was \$25,431, compared with \$12,724 in 1933.

Commercial production for 1934 was as follows:

| <i>Substance</i>          | <i>Amount</i>   | <i>Value</i>    |
|---------------------------|-----------------|-----------------|
| Copper-----               | 448 lbs.        | \$36            |
| Gold-----                 | -----           | 3,726           |
| Lead-----                 | 1,564 lbs.      | 58              |
| Silver-----               | 3,668 fine ozs. | 2,371           |
| Stone, miscellaneous----- | -----           | 10,334          |
| Unapportioned-----        | -----           | 8,856           |
| <b>Total value-----</b>   | -----           | <b>\$26,431</b> |

### AMADOR

*Land area:* 601 square miles.

*Population:* 8494 (1930 census).

*Location:* East-central part of State—Mother Lode District.

*County seat:* Jackson.

*References:* State Mineralogist Report XIV:XVII:XVIII:XIX:  
XX:XXIII (April, 1927):XXX.

Amador County ranked twelfth as to value of mineral output for 1934, with ten different substances worth \$2,400,161, compared with \$2,028,598 in 1933.

Amador at one time led the State in gold production, though exceeded in 1920–1923 and in 1926–1927 by Yuba and Nevada counties, but in 1925 and 1928 by Yuba only, in 1929–1930 by Nevada only, and in 1931–1934 by Nevada and Sacramento.

Commercial production for 1934 was as follows:

| <i>Substance</i>          | <i>Amount</i>    | <i>Value</i>       |
|---------------------------|------------------|--------------------|
| Clay (pottery)-----       | 28,620 tons      | \$50,833           |
| Copper-----               | 7,254 lbs.       | 580                |
| Gold-----                 | -----            | 2,274,275          |
| Lead-----                 | 6,012 lbs.       | 223                |
| Silver-----               | 16,311 fine ozs. | 10,544             |
| Stone, miscellaneous----- | -----            | 12,115             |
| Other minerals*-----      | -----            | 51,591             |
| <b>Total value-----</b>   | -----            | <b>\$2,400,161</b> |

\* Includes brick, coal, gems (diamond).

**BUTTE**

*Land area:* 1722 square miles.

*Population:* 34,010 (1930 census).

*Location:* North-central portion of state.

*County seat:* Oroville.

*References:* State Mineralogist Report XV: XVII: XVIII: XXIV (July, 1928): XXVI (Oct., 1930).

Butte County ranks twenty-eighth in California in regard to value of mineral output in 1934, with eleven different substances having a total value of \$637,962, as compared with \$404,661 in 1933.

Commercial production for 1934 was as follows:

| <i>Substance</i>           | <i>Amount</i>   | <i>Value</i>     |
|----------------------------|-----------------|------------------|
| Copper -----               | 1,805 lbs.      | \$144            |
| Gold -----                 | -----           | 544,000          |
| Silver -----               | 4,907 fine ozs. | 3,172            |
| Stone, miscellaneous ----- | -----           | 80,971           |
| Other minerals* -----      | -----           | 9,675            |
| <b>Total value</b> -----   | -----           | <b>\$637,962</b> |

\* Includes brick, lead, gems (diamonds), mineral water, natural gas, soapstone.

**CALAVERAS**

*Land area:* 1027 square miles.

*Population:* 6009 (1930 census).

*Location:* East-central portion of state—Mother Lode District.

*County seat:* San Andreas.

*References:* State Mineralogist Report XIV: XVII: XVIII: XIX: XX: XXI (April, 1925).

Calaveras County ranks fourteenth in California in regard to value of mineral output in 1934 with a total of \$2,196,592, as compared with the 1933 figures of \$938,981. The increase was due to gold.

Commercial production for 1934 was as follows:

| <i>Substance</i>          | <i>Amount</i>    | <i>Value</i>       |
|---------------------------|------------------|--------------------|
| Gold -----                | -----            | \$1,274,862        |
| Lead -----                | 612 lbs.         | 23                 |
| Silver -----              | 10,661 fine ozs. | 7,021              |
| Miscellaneous stone ----- | -----            | 48,239             |
| Other minerals* -----     | -----            | 866,447            |
| <b>Total value</b> -----  | -----            | <b>\$2,196,592</b> |

\* Includes cement, clay (pottery), copper, mineral water.

**COLUSA**

*Land area:* 1140 square miles.

*Population:* 10,257 (1930 census).

*Location:* Sacramento Valley.

*County seat:* Colusa.

*References:* State Mineralogist Report XIV: XVII: XVIII: XXV (April, 1929).

Colusa County ranked forty-ninth in regard to the value of mineral output in 1934 with six different mineral substances worth a total of \$45,875, as compared with \$8,896 in 1933.

Commercial production for 1934 was as follows:

| <i>Substance</i>           | <i>Amount</i> | <i>Value</i> |
|----------------------------|---------------|--------------|
| Gold -----                 | -----         | \$477        |
| Silver -----               | 5 fine ozs.   | 3            |
| Stone, miscellaneous ----- | -----         | 34,625       |
| Other minerals* -----      | -----         | 10,770       |
| Total value -----          |               | \$45,875     |

\* Includes mineral water, quicksilver, petroleum.

#### CONTRA COSTA

*Land area:* 714 square miles.

*Population:* 78,554 (1930 census).

*Location:* East side of San Francisco Bay.

*County seat:* Martinez.

*References:* State Mineralogist Report XVII : XVIII : XXIII (Jan., 1927).

Contra Costa County stands eighteenth on the list in respect to value of mineral output for 1934, with eight different substances worth \$1,734,999, as compared with \$1,231,971 in 1933.

Commercial production for 1934 was as follows:

| <i>Substance</i>           | <i>Value</i> |
|----------------------------|--------------|
| Stone, miscellaneous ----- | \$408,412    |
| Other minerals* -----      | 1,326,587    |
| Total value -----          | \$1,734,999  |

\* Includes brick and hollow building tile, cement, pottery clay, mineral water, sandstone, silica (glass sand).

#### DEL NORTE

*Land area:* 1024 square miles.

*Population:* 4734 (1930 census).

*Location:* Extreme northwest corner of state.

*References:* State Mineralogist Report XIV: XVII: XXI (July, 1925) : XXIX (Jan.-April, 1933).

Del Norte County was in forty-sixth place as a mineral producing county for 1934, with five different substances worth \$81,998, as compared with \$3,062 in 1933.

Commercial production for 1934 was as follows:

| <i>Substance</i>           | <i>Amount</i> | <i>Value</i> |
|----------------------------|---------------|--------------|
| Gold -----                 | -----         | \$8,078      |
| Silver -----               | 20 fine ozs.  | 13           |
| Stone, miscellaneous ----- | -----         | 73,883       |
| Other minerals -----       | -----         | 24           |
| Total value -----          | -----         | \$81,998     |

#### EL DORADO

*Land area:* 1753 square miles.

*Population:* 8303 (1930 census).

*Location:* East-central portion of the state, northernmost of the Mother Lode counties.

*County seat:* Placerville.

*References:* State Mineralogist Report XV: XVII: XVIII: XIX: XX: XXII (Oct., 1926).

El Dorado County, which contains the location where gold in California was first heralded to the world, comes seventeenth on the list



of counties ranked according to value for 1934, with eleven different mineral substances worth \$1,738,576. In addition to the segregated figures here given, a large tonnage of limestone is annually shipped for use in cement manufacture, the value being included in the state's total for cement. The 1933 output was valued at \$920,747. Gold accounts for the increased value.

Commercial production for 1934 was as follows:

| <i>Substance</i>           | <i>Amount</i>   | <i>Value</i>       |
|----------------------------|-----------------|--------------------|
| Copper -----               | 4,312 lbs.      | \$345              |
| Gold -----                 |                 | 1,380,710          |
| Lime -----                 | 8,250 tons      | 85,938             |
| Limestone -----            | 112,237 tons    | 239,743            |
| Silver -----               | 9,335 fine ozs. | 6,035              |
| Stone, miscellaneous ----- |                 | 7,400              |
| Other minerals* -----      |                 | 18,405             |
| <b>Total value -----</b>   |                 | <b>\$1,738,576</b> |

\* Includes lead, silica (quartz), slate, soapstone.

### FRESNO

*Land area:* 5950 square miles.

*Population:* 144,369 (1930 census).

*Location:* South-central portion of state.

*County seat:* Fresno.

*References:* State Mineralogist Report XIV: XVII: XVIII: XXV (July, 1929).

Fresno County, ninth in importance as a mineral producer among the counties of California, reports an output for 1934 of fifteen different mineral substances, with a total value of \$5,772,807, as compared with the 1933 value of \$3,901,103.

Commercial production for 1934 was as follows:

| <i>Substance</i>         | <i>Amount</i>       | <i>Value</i>       |
|--------------------------|---------------------|--------------------|
| Gold -----               |                     | \$24,066           |
| Natural gas -----        | 1,968,080 M cu. ft. | 1,235,707          |
| Petroleum -----          | 6,607,661 bbls.     | 4,295,980          |
| Quicksilver -----        | 130 flasks          | 1,208              |
| Silver -----             | 135 fine ozs.       | 87                 |
| Other minerals* -----    |                     | 215,759            |
| <b>Total value -----</b> |                     | <b>\$5,772,807</b> |

\* Includes brick and hollow building tile, clay (pottery), copper, diatomite, gems (topaz), granite, gypsum, limestone, miscellaneous stone.

### GLENN

*Land area:* 1259 square miles.

*Population:* 10,935 (1930 census).

*Location:* West side of Sacramento Valley.

*County seat:* Willows.

*References:* State Mineralogist Report XIV: XVII: XVIII.

Glenn County stands fifty-second as a mineral producing county of the State for 1934 and owes its position mainly to the presence of large deposits of sand and gravel, much of which is used as railroad ballast.

Commercial production for 1934 was as follows, being an increase over \$11,690, the output for the previous year:

| <i>Substance</i>           | <i>Value</i> |
|----------------------------|--------------|
| Stone, miscellaneous ----- | \$30,608     |

**HUMBOLDT**

*Land area:* 3634 square miles.

*Population:* 43,189 (1930 census).

*Location:* Northwestern portion of state, bordering on Pacific Ocean.

*County seat:* Eureka.

*References:* State Mineralogist Report XIV: XVII: XVIII: XXI (July, 1925).

Humboldt County ranked forty-seventh in the value of its mineral output among the counties of the State for 1934, with seven different mineral substances valued at \$81,432, compared with the 1933 output worth \$71,051.

Commercial production for 1934 was as follows:

| <i>Substance</i>           | <i>Amount</i> | <i>Value</i>    |
|----------------------------|---------------|-----------------|
| Gold -----                 | -----         | \$28,978        |
| Silver -----               | 124 fine ozs. | 80              |
| Stone, miscellaneous ----- | -----         | 50,371          |
| Other minerals* -----      | -----         | 2,003           |
| <b>Total value</b> -----   | -----         | <b>\$81,432</b> |

\* Includes brick, pottery clay, natural gas.

**IMPERIAL**

*Land area:* 4089 square miles.

*Population:* 60,894 (1930 census).

*Location:* Extreme southeast corner of the state.

*County seat:* El Centro.

*References:* State Mineralogist Report XIV: XVII: XVIII: XIX: XX: XXII (April, 1926).

Imperial County ranked forty-fifth in total value of mineral output for 1934, with ten different mineral substances worth \$108,480, compared with \$166,858 for 1933.

Commercial production for 1934 was as follows:

| <i>Substance</i>           | <i>Amount</i> | <i>Value</i>     |
|----------------------------|---------------|------------------|
| Gold -----                 | -----         | \$9,973          |
| Silver -----               | 110 fine ozs. | 71               |
| Stone, miscellaneous ----- | -----         | 48,066           |
| Other minerals* -----      | -----         | 50,370           |
| <b>Total value</b> -----   | -----         | <b>\$108,480</b> |

\* Includes carbon dioxide, copper, gypsum, pumice, salt, cyanite.

**INYO**

*Land area:* 10,019 square miles.

*Population:* 6557 (1930 census).

*Location:* Lies on eastern border of state, north of San Bernardino County.

*County seat:* Independence.

*References:* State Mineralogist Report XV: XVII: XVIII: XX: XXII (Oct., 1926): XXVII, XXX.

Inyo County's mineral output for 1934 reached a total value of \$1,293,725, having seventeen different mineral substances and standing

twentieth among the counties of the State as to value of production. The 1933 yield was worth \$1,014,913.

Commercial production for 1934 was as follows:

| <i>Substance</i>              | <i>Amount</i>    | <i>Value</i> |
|-------------------------------|------------------|--------------|
| Copper -----                  | 33,363 lbs.      | \$2,669      |
| Gold -----                    |                  | 266,109      |
| Lead -----                    | 530,037 lbs.     | 19,611       |
| Pumice and volcanic ash ----- | 637 tons         | 5,115        |
| Silver -----                  | 40,130 fine ozs. | 25,943       |
| Stone, miscellaneous -----    |                  | 66,081       |
| Zinc -----                    | 721,719 lbs.     | 31,034       |
| Other minerals* -----         |                  | 877,163      |
| Total value -----             |                  | \$1,293,725  |

\* Includes bentonite, borates, dolomite, gems (beryl), slate, soda, sulphur, talc.

### KERN

*Land area:* 8003 square miles.

*Population:* 82,219 (1930 census).

*Location:* South-central portion of state.

*County seat:* Bakersfield.

*References:* State Mineralogist Report XIV: XVII: XVIII:

XIX:XX:XXV (Jan., 1929): XXIX (July-Oct., 1933): XXX.

Kern County, because of its immensely productive oil fields, for many years stood preeminent among all counties of California in the value of its mineral output. It was surpassed by Los Angeles and Orange counties in 1923, but by Los Angeles only in 1924-1934, for which petroleum is responsible. The 1934 production consisted of nineteen different mineral substances valued at \$37,053,187, compared with the 1933 output worth \$27,877,930.

Commercial production for 1934 was as follows:

| <i>Substance</i>                               | <i>Amount</i>        | <i>Value</i> |
|--|----------------------|--------------|
| Clay (oil-well drilling-mud and pottery) ----- | 19,526 tons          | \$30,142     |
| Copper -----                                   | 5,502 lbs.           | 440          |
| Gold -----                                     |                      | 1,021,849    |
| Lead -----                                     | 11,008 lbs.          | 407          |
| Natural gas -----                              | 21,309,723 M cu. ft. | 1,017,661    |
| Petroleum -----                                | 41,823,494 bbls.     | 30,475,225   |
| Silver -----                                   | 113,646 fine ozs.    | 73,468       |
| Stone, miscellaneous -----                     |                      | 131,743      |
| Other minerals* -----                          |                      | 4,302,252    |
| Total value -----                              |                      | \$37,053,187 |

\* Includes bentonite, borates, brick, cement, gems, volcanic ash, quicksilver, salt, tungsten ore, wollastonite.

### KINGS

*Land area:* 1559 square miles.

*Population:* 25,277 (1930 census).

*Location:* South-central portion of the state.

*County seat:* Hanford.

*References:* State Mineralogist Report XIV: XVII: XVIII: XXVI (Oct., 1930).

Kings County advanced from ninth position in 1929 to seventh in value of mineral production for 1930, and third for 1931-1933, accounted for by the bringing in of further oil wells at Kettleman Hills, which began commercial yield in 1928.

With six mineral substances commercial production for 1934 was as follows, compared with a total value of \$25,474,252 for 1933:

| <i>Substance</i>          | <i>Amount</i>        | <i>Value</i> |
|---------------------------|----------------------|--------------|
| Gold-----                 |                      | \$694        |
| Natural gas-----          | 96,939,145 M cu. ft. | 4,957,070    |
| Petroleum-----            | 21,393,483 bbls.     | 23,104,962   |
| Silver-----               | 4 fine ozs.          | 3            |
| Stone, miscellaneous----- |                      | 2,560        |
| Unapportioned-----        |                      | 2,100        |
| Total value-----          |                      | \$28,067,389 |

#### LAKE

*Land area:* 1278 square miles.

*Population:* 7166 (1930 census).

*Location:* About fifty miles north of San Francisco Bay and the same distance inland from the Pacific Ocean.

*County seat:* Lakeport.

*References:* State Mineralogist Report XIV: XVII: XVIII: XX: XXV (July, 1929).

Lake County was in thirty-sixth place as to the value of mineral output for 1934, with five different mineral substances worth \$260,481 compared with \$134,851 for 1933.

Commercial production for 1934 was as follows:

| <i>Substance</i>          | <i>Amount</i> | <i>Value</i> |
|---------------------------|---------------|--------------|
| Mineral water-----        | 11,372 gals.  | \$11,005     |
| Quicksilver-----          | 3,497 flasks  | 221,837      |
| Stone, miscellaneous----- |               | 27,426       |
| Other minerals *-----     |               | 213          |
| Total value-----          |               | \$260,481    |

\* Includes manganese ore and natural gas.

#### LASSEN

*Land area:* 4531 square miles.

*Population:* 12,587 (1930 census).

*Location:* Northeast portion of state.

*County seat:* Susanville.

*References:* State Mineralogist Report XV: XVII: XVIII: XIX: XXV (Jan., 1929): XXX.

Lassen County was in fifty-fourth place as a mineral producer for 1934, output was as follows, being a decrease from \$45,739, which was the value for the previous year:

| <i>Substance</i>   | <i>Amount</i> | <i>Value</i> |
|--------------------|---------------|--------------|
| Copper-----        | 304 lbs.      | \$24         |
| Gold-----          |               | 14,689       |
| Silver-----        | 430 fine ozs. | 278          |
| Unapportioned----- |               | 13,327       |
| Total value-----   |               | \$28,318     |

#### LOS ANGELES

*Land area:* 4067 square miles.

*Population:* 2,201,526 (1930 census).

*Location:* One of the southwestern coast counties.

*County seat:* Los Angeles.

*References:* State Mineralogist Report XV: XVII: XVIII: XIX: XX:XXIII (July, 1927): XXX.

The mineral production for Los Angeles County for the year 1934

amounted in value to \$66,359,227, as compared with the 1933 output worth \$68,785,294. This accounted for 28% of the entire State's total for 1934 and ranked Los Angeles first in the State as a mineral producer, exceeding Kern County, which was the leader for several years in the past.

Commercial production for 1934, consisting of sixteen substances, was as follows:

| <i>Substance</i>           | <i>Amount</i>        | <i>Value</i> |
|----------------------------|----------------------|--------------|
| Brick -----                | 30,739 M             | \$685,611    |
| Hollow building tile ----- | 3,478 tons           | 24,960       |
| Clay (pottery) -----       | 13,763 tons          | 7,772        |
| Copper -----               | 517 lbs.             | 41           |
| Gold -----                 | -----                | 57,924       |
| Iodine -----               | 355,279 lbs.         | 423,016      |
| Lead -----                 | 4,008 lbs.           | 148          |
| Mineral water -----        | 8,202,017 gals.      | 479,710      |
| Natural gas -----          | 58,220,382 M cu. ft. | 3,421,320    |
| Petroleum -----            | 60,297,000 bbls.     | 59,711,578   |
| Sandstone -----            | -----                | 8,250        |
| Silver -----               | 827 fine ozs.        | 535          |
| Stone, miscellaneous ----- | -----                | 1,220,639    |
| Other minerals * -----     | -----                | 317,723      |
| Total value -----          | -----                | \$66,359,227 |

\* Includes diatomite and salt.

### MADERA

*Land area:* 2112 square miles.

*Population:* 17,152 (1930 census).

*Location:* East-central portion of state.

*County seat:* Madera.

*References:* State Mineralogist Report XIV : XVII : XVIII : XXIV (Oct., 1928) : XXX.

Madera County was in thirty-fifth place, as a mineral producer, for 1934 with an output of six different substances valued at \$264,142, compared with \$133,105 for 1933.

Commercial production for 1934 was as follows:

| <i>Substance</i>           | <i>Amount</i> | <i>Value</i> |
|----------------------------|---------------|--------------|
| Gold -----                 | -----         | \$13,163     |
| Silver -----               | 107 fine ozs. | 69           |
| Stone, miscellaneous ----- | -----         | 53,590       |
| Other minerals * -----     | -----         | 197,320      |
| Total value -----          | -----         | \$264,142    |

\* Includes granite and volcanic ash.

### MARIN

*Land area:* 529 square miles.

*Population:* 41,635 (1930 census).

*Location:* Adjoins San Francisco on the north.

*County seat:* San Rafael.

*References:* State Mineralogist Report XIV : XVII : XVIII : XXII (July, 1926) : XXIX.

Marin County, in fortieth place as to the value of mineral output for 1934, with four different mineral substances, had a commercial production which was as follows:

| <i>Substance</i>           | <i>Value</i> |
|----------------------------|--------------|
| Stone, miscellaneous ----- | \$136,127    |
| Other minerals * -----     | 47,227       |
| Total value -----          | \$183,354    |

\* Includes brick and mineral water.

**MARIPOSA**

*Land area:* 1453 square miles.

*Population:* 2530 (1930 census).

*Location:* Most southerly of the Mother Lode counties. East-central portion of State.

*County seat:* Mariposa.

*References:* State Mineralogist Report XIV: XVII: XVIII: XIV (April, 1928).

Mariposa County is one of the distinctly "mining" counties of the State, although it stands but twenty-fourth on the list of counties in regard to the value of its mineral output for 1934 with a total of \$807,908, as compared with \$575,118 for 1933. Mariposa County is also the source of a large tonnage of limestone, annually, which is otherwise credited to cement manufacture in Merced County.

Commercial production for 1934 was as follows:

| <i>Substance</i>           | <i>Amount</i>   | <i>Value</i> |
|----------------------------|-----------------|--------------|
| Copper -----               | 1,771 lbs.      | \$142        |
| Gold -----                 | -----           | 517,443      |
| Silver -----               | 4,971 fine ozs. | 3,214        |
| Stone, miscellaneous ----- | -----           | 185,960      |
| Other minerals * -----     | -----           | 101,149      |
| Total value -----          | -----           | \$807,908    |

\* Includes barite, granite, lead.

**MENDOCINO**

*Land area:* 3453 square miles.

*Population:* 23,491 (1930 census).

*Location:* Joins Humboldt County on the south and bounded by the Pacific Ocean on the west.

*County seat:* Ukiah.

*References:* State Mineralogist Report XIV: XVII: XVIII: XIX: XX.

Mendocino County's mineral output for 1934 was valued at \$14,351, which ranked it fifty-seventh among the counties of the State as a mineral producer, compared with \$35,283 for 1933. Commercial production for 1934 was as follows:

| <i>Substance</i>           | <i>Value</i> |
|----------------------------|--------------|
| Stone, miscellaneous ----- | \$14,301     |
| Unapportioned -----        | 50           |
| Total value -----          | \$14,351     |

**MERCED**

*Land area:* 1995 square miles.

*Population:* 36,900 (1930 census).

*Location:* About the geographical center of the state.

*County seat:* Merced.

*References:* State Mineralogist Report XIV: XVII: XVIII: XXI (April, 1925).

Merced County ranks twenty-second as to the value of mineral output for 1934, with seven different substances worth \$1,050,492, compared with \$766,014 for 1933.

Commercial production for 1934 was as follows:

| <i>Substance</i>           | <i>Amount</i>   | <i>Value</i> |
|----------------------------|-----------------|--------------|
| Gold -----                 |                 | \$598,695    |
| Silver -----               | 1,625 fine ozs. | 1,051        |
| Stone, miscellaneous ----- |                 | 38,643       |
| Other minerals * -----     |                 | 412,103      |
| Total value -----          |                 | \$1,050,492  |

\* Includes cement, gypsum, platinum.

### MODOC

*Land area:* 3823 square miles.

*Population:* 8038 (1930 census).

*Location:* The extreme northeast corner of the state.

*County seat:* Alturas.

*References:* State Mineralogist Report XV: XVII: XVIII: XXV (Jan., 1929): XXX.

Modoc County, in forty-eighth place, with six different mineral substances, reported a commercial production as follows:

| <i>Substance</i>           | <i>Amount</i> | <i>Value</i> |
|----------------------------|---------------|--------------|
| Gold -----                 |               | \$6,323      |
| Silver -----               | 103 fine ozs. | 67           |
| Stone, miscellaneous ----- |               | 41,150       |
| Other minerals -----       |               | 577          |
| Total value -----          |               | \$48,117     |



Standard Consolidated Mill at Bodie, Mono County.

*Cut by courtesy of Engineering and Mining Journal.*

### MONO

*Land area:* 3030 square miles.

*Population:* 1359 (1930 census).

*Location:* Is bordered by the state of Nevada on the east and is about in the central portion of the state measured on a north and south line.

*County seat:* Bridgeport.

*References:* State Mineralogist Report XV: XVII: XVIII: XX: XXIII (Oct., 1927): XXX.

Mono County, in thirty-seventh place with ten different mineral substances, reported a commercial production for 1934 as follows:

| <i>Substance</i>           | <i>Amount</i>    | <i>Value</i> |
|----------------------------|------------------|--------------|
| Copper -----               | 510 lbs.         | \$41         |
| Gold -----                 |                  | 56,092       |
| Lead -----                 | 7,487 lbs.       | 277          |
| Silver -----               | 31,255 fine ozs. | 20,205       |
| Stone, miscellaneous ----- |                  | 77,806       |
| Other minerals * -----     |                  | 58,017       |
| Total value -----          |                  | \$212,438    |

\* Includes gems, molybdenum ore, pumice, salt, andalusite.

### MONTEREY

*Land area:* 3330 square miles.

*Population:* 53,668 (1930 census).

*Location:* West-central portion of state, bordering on Pacific Ocean.

*County seat:* Salinas.

*References:* State Mineralogist Report XV: XVII: XVIII: XIX: XXI (Jan., 1925).

Monterey County produced thirteen different mineral substances during 1934, having a total value of \$190,902, as compared with \$114,040 for 1933.

In thirty-eighth place, commercial production for 1934 was as follows:

| <i>Substance</i>           | <i>Amount</i> | <i>Value</i> |
|----------------------------|---------------|--------------|
| Gold -----                 |               | \$517        |
| Silver -----               | 1 fine oz.    | 1            |
| Stone, miscellaneous ----- |               | 101,652      |
| Other minerals * -----     |               | 88,732       |
| Total value -----          |               | \$190,902    |

\* Includes clay (pottery), coal, diatomite, dolomite, natural gas, quicksilver, salt, sandstone, silica (glass sand).

### NAPA

*Land area:* 783 square miles.

*Population:* 22,832 (1930 census).

*Location:* Directly north of San Francisco Bay—one of the 'bay counties.'

*County seat:* Napa.

*References:* State Mineralogist Report XIV: XVII: XVIII:XX: XXV (April, 1929).

In 1934 the value of Napa County's mineral output was \$398,214, placing it in thirty-second place in the list of counties, as compared with \$209,542 for 1933.

With eight different mineral substances, commercial production for 1934 was as follows:

| <i>Substance</i>           | <i>Amount</i> | <i>Value</i> |
|----------------------------|---------------|--------------|
| Mineral water -----        | 47,900 gal.   | \$13,900     |
| Quicksilver -----          | 1,706 flasks  | 120,372      |
| Stone, miscellaneous ----- |               | 256,982      |
| Other minerals * -----     |               | 6,960        |
| Total value -----          |               | \$398,214    |

\* Includes asbestos, pumice, paving blocks, sandstone.

### NEVADA

*Land area:* 974 square miles.

*Population:* 10,589 (1930 census).



**Location:** North of Lake Tahoe, on the eastern border of the state.

**County seat:** Nevada City.

**References:** State Mineralogist Report XVI: XVII: XVIII: XIX: XX: XXVI (April, 1930).

Nevada, one of the mountain counties of California, for some years alternated with Amador in the gold lead, but both were passed by Yuba in 1918-1921, also 1923. In 1922, 1924, 1929 to 1934, Nevada led all counties in gold output, but it held third place in 1925 and 1928, and second place in 1926 and 1927. Nevada County stands ninth on the list of counties in regard to value of its mineral output for 1934, with seven different mineral substances worth \$7,488,996, as compared with \$4,767,391 for 1933. The increase was due mainly to gold and silver.

Commercial production for 1934 was as follows:

| Substance                  | Amount            | Value       |
|----------------------------|-------------------|-------------|
| Copper -----               | 113,771 lbs.      | \$9,102     |
| Gold -----                 | -----             | 7,118,551   |
| Lead -----                 | 130,301 lbs.      | 4,821       |
| Silver -----               | 314,509 fine ozs. | 203,190     |
| Stone, miscellaneous ----- | -----             | 151,032     |
| Unapportioned -----        | -----             | 2,300       |
| Total value -----          | -----             | \$7,488,996 |

### ORANGE

**Land area:** 795 square miles.

**Population:** 118,611 (1930 census).

**Location:** Southwestern portion of state, bordering Pacific Ocean.

**County seat:** Santa Ana.

**References:** State Mineralogist Report XV: XVII: XVIII: XIX: XX: XXI (Jan., 1925).

Orange County, in fourth place as to the value of mineral output for 1934, produced nine mineral substances, worth \$25,746,031, as compared with \$19,263,581 for 1933.

Commercial production for 1934 was as follows:

| Substance                  | Amount               | Value        |
|----------------------------|----------------------|--------------|
| Clay (pottery) -----       | 12,740 tons          | \$31,328     |
| Gold -----                 | -----                | 572          |
| Natural gas -----          | 21,256,008 M cu. ft. | 1,366,560    |
| Petroleum -----            | 25,891,732 bbls.     | 24,258,123   |
| Silver -----               | 2 fine ozs.          | 1            |
| Stone, miscellaneous ----- | -----                | 78,986       |
| Other minerals * -----     | -----                | 10,461       |
| Total value -----          | -----                | \$25,746,031 |

\* Includes brick and mineral water.

### PLACER

**Land area:** 1395 square miles.

**Population:** 24,442 (1930 census).

**Location:** Eastern border of state directly west of Lake Tahoe.

**County seat:** Auburn.

**References:** State Mineralogist Report XV: XVII: XVIII: XIX: XX: XXIII (July, 1927).

Placer County in twenty-fifth place, with eleven different mineral substances had a commercial production for 1934 as follows, compared with \$293,866 for the previous year:

| <i>Substance</i>          | <i>Amount</i>    | <i>Value</i> |
|---------------------------|------------------|--------------|
| Clay (pottery)-----       | 38,975 tons      | \$60,555     |
| Copper-----               | 1,953 lbs.       | 156          |
| Gold-----                 | -----            | 547,892      |
| Silver-----               | 10,808 fine ozs. | 6,987        |
| Stone, miscellaneous----- | -----            | 33,413       |
| Other minerals *-----     | -----            | 29,229       |
| Total value -----         | -----            | \$678,232    |

\* Includes brick, granite, lead, mineral water, chromite.

### PLUMAS

*Land area:* 2594 square miles.

*Population:* 7909 (1930 census).

*Location:* Northeastern border of state, south of Lassen County.

*County seat:* Quincy.

*References:* State Mineralogist Report XVI: XVII: XVIII: XIX: XX:XXIV (Oct., 1928): XXIX: XXX

Plumas County's mineral output for 1934 with seven different mineral substances was valued at \$181,143, as compared with \$131,150 for 1933.

In forty-first place, commercial production for 1934 was as follows:

| <i>Substance</i>      | <i>Amount</i>   | <i>Value</i> |
|-----------------------|-----------------|--------------|
| Copper-----           | 773 lbs.        | \$59         |
| Gold-----             | -----           | 153,056      |
| Lead-----             | 2,960 lbs.      | 110          |
| Silver-----           | 1,111 fine ozs. | 718          |
| Other minerals *----- | -----           | 27,200       |
| Total value -----     | -----           | \$181,143    |

\* Includes barites, granite, miscellaneous stone.

### RIVERSIDE

*Land area:* 7240 square miles.

*Population:* 82,078 (1930 census).

*Location:* Southern portion of state.

*County seat:* Riverside.

*References:* State Mineralogist Report XV: XVII: XVIII: XX: XXV (Oct., 1929): XXX.

Riverside is the fourth county in the state in size and the eleventh in regard to the total value of mineral output for 1934. Within its borders are included mountain, desert, and agricultural land. In point of variety Riverside County showed fourteen different mineral substances commercially produced in 1934 with a total value of \$2,590,545. The increase in the 1934 output over that of 1933, which was valued at \$2,218,738, was due mainly to cement.

Commercial production for 1934 was as follows:

| <i>Substance</i>          | <i>Amount</i> | <i>Value</i> |
|---------------------------|---------------|--------------|
| Clay (pottery)-----       | 16,081 tons   | \$35,101     |
| Copper-----               | 1,606 lbs.    | 128          |
| Gold-----                 | -----         | 41,899       |
| Lead-----                 | 1,207 lbs.    | 45           |
| Silver-----               | 664 fine ozs. | 429          |
| Stone, miscellaneous----- | -----         | 136,032      |
| Other minerals*-----      | -----         | 2,376,911    |
| Total value -----         | -----         | \$2,590,545  |

\* Includes brick and hollow building tile, cement, gems (Iceland spar), gypsum, mineral water, silica (glass sand), manganese ore.

**SACRAMENTO**

**Land area:** 983 square miles.

**Population:** 141,915 (1930 census).

**Location:** North-central portion of State.

**County seat:** Sacramento.

**References:** State Mineralogist Report XV: XVII: XVIII: XX: XXI (Jan., 1925).

Sacramento stands tenth among the counties of the State as a mineral producer, the output, principally gold, for 1934 being valued at \$3,877,757, as compared with the 1933 production worth \$3,172,763. In regard to gold output alone, this county ranks second, being exceeded only by Nevada, the Sacramento product coming from the dredges. With ten mineral substances, commercial production for 1934 was as follows:

| <i>Substance</i>                    | <i>Amount</i>   | <i>Value</i> |
|-------------------------------------|-----------------|--------------|
| Brick and hollow building tile----- | -----           | \$40,572     |
| Gold-----                           | -----           | 3,555,468    |
| Silver-----                         | 4,548 fine ozs. | 2,940        |
| Stone, miscellaneous-----           | -----           | 233,294      |
| Other minerals *-----               | -----           | 45,483       |
| Total value-----                    | -----           | \$3,877,757  |

\* Includes copper, lead, granite, natural gas, platinum, paving blocks.

**SAN BENITO**

**Land area:** 1392 square miles.

**Population:** 11,310 (1930 census).

**Location:** West-central portion of state.

**County seat:** Hollister.

**References:** State Mineralogist Report XV: XVII: XVIII: XX: XXII (April, 1926).

San Benito County ranks thirty-fourth among the counties in regard to the value of total mineral production for 1934, having an output worth \$266,857, as compared with \$247,479 for the previous year.

Commercial production for 1934 was as follows:

| <i>Substance</i>      | <i>Amount</i> | <i>Value</i> |
|-----------------------|---------------|--------------|
| Quicksilver-----      | 746 flasks    | \$52,699     |
| Other minerals *----- | -----         | 214,158      |
| Total value-----      | -----         | \$266,857    |

\* Includes bentonite and miscellaneous stone.

**SAN BERNARDINO**

**Land area:** 20,157 square miles.

**Population:** 133,827 (1930 census).

**Location:** Southeastern portion of state.

**County seat:** San Bernardino.

**References:** State Mineralogist Report XV: XVII: XVIII: XIX: XXVI (July, 1930): XXVII (July, 1931): XXX.

San Bernardino, by far the largest county in the State in area, ranks sixth as regards to the value of mineral output for 1934 with a total of \$10,537,050, as compared with the 1933 total of \$8,975,485.

San Bernardino for several years (except 1918) has led all other counties in the State in point of variety of minerals, producing commercially during 1934 a total of 25 different substances.

Commercial production for 1934 was as follows:

| <i>Substance</i>          | <i>Amount</i>     | <i>Value</i> |
|---------------------------|-------------------|--------------|
| Clay (pottery)-----       | 1,185 tons        | \$7,844      |
| Copper-----               | 25,606 lbs.       | 2,048        |
| Gold-----                 |                   | 301,994      |
| Lead-----                 | 103,497 lbs.      | 3,829        |
| Lime-----                 | 3,996 tons        | 30,846       |
| Limestone-----            | 11,210 tons       | 23,749       |
| Silver-----               | 228,314 fine ozs. | 147,597      |
| Stone, miscellaneous----- |                   | 165,057      |
| Other minerals *-----     |                   | 9,848,086    |
| Total value-----          |                   | \$10,537,050 |

\* Includes barite, bentonite, borates, brick, calcium chloride, cement, fluorspar, gems, manganese ore, mineral water, iron ore, potash, salt, soda, tungsten ore.

### SAN DIEGO

*Land area:* 4221 square miles.

*Population:* 209,477 (1930 census).

*Location:* Extreme southwest corner of state.

*County seat:* San Diego.

*References:* State Mineralogist Report XIV : XVII : XVIII : XIX : XX : XXI (July, 1925), XXX.

San Diego County ranks twenty-ninth in the total value of its mineral output for the year 1934 with fifteen different mineral substances on the commercial list. The value for 1934 was \$487,266, as compared with the 1933 output worth \$620,881.

Commercial production for 1934 was as follows:

| <i>Substance</i>                    | <i>Amount</i> | <i>Value</i> |
|-------------------------------------|---------------|--------------|
| Brick and hollow building tile----- |               | \$24,506     |
| Gold-----                           |               | 25,514       |
| Granite-----                        | 6,333 cu. ft. | 11,167       |
| Silver-----                         | 289 fine ozs. | 187          |
| Stone, miscellaneous-----           |               | 212,884      |
| Other minerals *-----               |               | 213,008      |
| Total value-----                    |               | \$487,266    |

\* Includes bromine, clay (pottery), copper, feldspar, magnesium chloride, mineral water, salt, silica (quartz), tube-mill pebbles.

### SAN FRANCISCO

*Land area:* 46½ square miles.

*Population:* 637,212 (1930 census).

*County seat:* San Francisco.

*References:* State Mineralogist Report XVII : XVIII : XX : XXV (April, 1929).

Surprising as it may appear at first glance, San Francisco County is listed among the mineral producing sections of the State, actual production consisting mainly of crushed rock, sand, gravel and mineral water.

In fifty-third place, commercial production for 1934 was as follows:

| <i>Substance</i>     | <i>Value</i> |
|----------------------|--------------|
| Unapportioned *----- | \$28,641     |

\* Includes mineral water and miscellaneous stone.

**SAN JOAQUIN**

**Land area:** 1448 square miles.

**Population:** 102,871 (1930 census).

**Location:** Central portion of state.

**County seat:** Stockton.

**References:** State Mineralogist Report XIV: XVII: XVIII: XXI (April, 1925).

San Joaquin County reported a mineral production for 1934, having a total value of \$148,097, as compared with \$153,127 for 1933. In forty-third place, commercial production for 1934 was as follows:

| <i>Substance</i>           | <i>Amount</i> | <i>Value</i>     |
|----------------------------|---------------|------------------|
| Gold -----                 | -----         | \$1,133          |
| Silver -----               | 3 fine ozs.   | 2                |
| Stone, miscellaneous ----- | -----         | 77,507           |
| Other minerals * -----     | -----         | 69,455           |
| <b>Total value</b> -----   | -----         | <b>\$148,097</b> |

\* Includes brick and hollow building tile and natural gas.

**SAN LUIS OBISPO**

**Land area:** 3334 square miles.

**Population:** 29,617 (1930).

**Location:** Bordered by Kern County on the east and the Pacific Ocean on the west.

**County seat:** San Luis Obispo.

**References:** State Mineralogist Report XV: XVII: XVIII: XXI (Oct., 1925).

The total value of the mineral production of San Luis Obispo County in 1934, with eleven different mineral substances, was \$138,453, as compared with \$55,914 for 1933. In forty-fourth place, commercial production for 1934 was as follows:

| <i>Substance</i>           | <i>Amount</i> | <i>Value</i>     |
|----------------------------|---------------|------------------|
| Gold -----                 | -----         | \$1,946          |
| Quicksilver -----          | 1,302 flasks  | 91,677           |
| Silver -----               | 8 fine ozs.   | 5                |
| Stone, miscellaneous ----- | -----         | 11,860           |
| Other minerals * -----     | -----         | 32,965           |
| <b>Total value</b> -----   | -----         | <b>\$138,453</b> |

\* Includes brick, granite (tuff), mineral water, chromite, petroleum, sandstone, volcanic ash.

**SAN MATEO**

**Land area:** 447 square miles.

**Population:** 77,338 (1930 census).

**Location:** Peninsula, adjoined by San Francisco on the north.

**County seat:** Redwood City.

**References:** State Mineralogist Report XVII: XVIII: XXV (April, 1929): XXIX.

San Mateo County had a mineral output in 1934 of eight different substances having a total value of \$1,562,490, as compared with the 1933 production worth \$1,569,480.

In nineteenth place, commercial production for 1934 was as follows:

| <i>Substance</i>           | <i>Value</i> |
|----------------------------|--------------|
| Stone, miscellaneous ----- | \$24,000     |
| Other minerals * -----     | 1,538,490    |
| Total value -----          | \$1,562,490  |

\* Includes cement, limestone (shells), magnesium carbonate, natural gas, petroleum, salt.

### SANTA BARBARA

*Land area:* 2740 square miles.

*Population:* 65,075 (1930 census).

*Location:* Southwestern portion of State, adjoining San Luis Obispo on the south.

*County seat:* Santa Barbara.

*References:* State Mineralogist Report XV: XVII: XVIII: XIX: XXI (Oct., 1925).

Santa Barbara County owes its position of seventh in the State in regard to its mineral output to the presence of productive oil fields within its boundaries. The total value of its mineral production during the year 1934 was \$7,570,191, as compared with the 1933 output of \$7,011,773.

With eight different substances, commercial production for 1934 was as follows:

| <i>Substance</i>          | <i>Amount</i>       | <i>Value</i> |
|---------------------------|---------------------|--------------|
| Natural gas -----         | 4,860,533 M cu. ft. | \$316,360    |
| Petroleum -----           | 6,648,120 bbls.     | 6,322,148    |
| Stone miscellaneous ----- | -----               | 51,602       |
| Other minerals * -----    | -----               | 880,081      |
| Total value -----         | -----               | \$7,570,191  |

\* Includes bituminous rock, brick, diatomite, marble (flagstones), mineral water.

### SANTA CLARA

*Land area:* 1328 square miles.

*Population:* 144,921 (1930 census).

*Location:* West-central portion of state.

*County seat:* San José.

*References:* State Mineralogist Report XVII: XVIII: XX: XXVI (Jan., 1930): XXIX.

Santa Clara County reported a mineral output for 1934 of \$386,445, as compared with the 1933 figures of \$534,378.

In thirty-third place with nine mineral substances, commercial production for 1934 was as follows:

| <i>Substance</i>                     | <i>Amount</i> | <i>Value</i> |
|--------------------------------------|---------------|--------------|
| Brick and hollow building tile ----- | -----         | \$54,154     |
| Clay (pottery) -----                 | 701 tons      | 442          |
| Limestone (marl & shells) -----      | 26,809 tons   | 84,033       |
| Quicksilver -----                    | 39 flasks     | 2,813        |
| Stone, miscellaneous -----           | -----         | 190,958      |
| Other minerals * -----               | -----         | 54,045       |
| Total value -----                    | -----         | \$386,445    |

\* Includes magnesite, natural gas, petroleum.

**SANTA CRUZ**

*Land area:* 435 square miles.

*Population:* 37,405 (1930 census).

*Location:* Bordering Pacific Ocean, just south of San Mateo County.

*County seat:* Santa Cruz.

*References:* State Mineralogist Report XVII: XVIII: XXII (Jan., 1926): XXIX.

The mineral output of Santa Cruz County, a portion of which is itemized below, amounted to a total of \$1,796,844 for 1934, giving the county a standing of sixteenth among all others in the State in this regard. This is an increase over the 1933 figures of \$1,234,180.

Commercial production for 1934 was as follows:

| <i>Substance</i>          | <i>Amount</i> | <i>Value</i> |
|---------------------------|---------------|--------------|
| Gold-----                 | -----         | \$130        |
| Silver-----               | 2 fine ozs.   | 1            |
| Stone, miscellaneous----- | -----         | 84,744       |
| Other minerals *-----     | -----         | 1,711,969    |
| Total value -----         | -----         | \$1,796,844  |

\* Includes bituminous rock, cement, coal, iron ore, lime, limestone.

**SHASTA**

*Land area:* 3858 square miles.

*Population:* 13,925 (1930 census).

*Location:* North-central portion of state.

*County seat:* Redding.

*References:* State Mineralogist Report XIV: XVII: XVIII: XIX: XXII (April, 1926): XXIX (Jan., April, 1933): XXX.

Shasta County stood twenty-first in California among the mineral producing counties in 1934, with an output valued at \$1,145,180, as compared with the 1933 production worth \$1,113,395.

With eight mineral substances, commercial production for 1934 was as follows:

| <i>Substance</i>          | <i>Amount</i>    | <i>Value</i> |
|---------------------------|------------------|--------------|
| Copper-----               | 388,775 lbs.     | \$31,102     |
| Gold-----                 | -----            | 718,583      |
| Silver-----               | 26,012 fine ozs. | 16,816       |
| Stone, miscellaneous----- | -----            | 147,070      |
| Other minerals *-----     | -----            | 231,609      |
| Total value -----         | -----            | \$1,145,180  |

\* Includes lead, platinum, pyrite.

**SIERRA**

*Land area:* 923 square miles.

*Population:* 2419 (1930 census).

*Location:* Eastern border of state just north of Nevada County.

*County seat:* Downieville.

*References:* State Mineralogist Report XVI: XVII: XVIII: XX: XXV (April, 1929).

Sierra County reported a mineral production of \$1,046,307 in 1934, which was mainly gold, as compared with the 1933 output worth \$449,146.

In twenty-third place, commercial production for 1934 was as follows:

| <i>Substance</i>          | <i>Amount</i>   | <i>Value</i> |
|---------------------------|-----------------|--------------|
| Copper-----               | 757 lbs.        | \$61         |
| Gold-----                 |                 | 1,027,582    |
| Lead-----                 | 2,104 lbs.      | 78           |
| Silver-----               | 7,032 fine ozs. | 4,546        |
| Stone, miscellaneous----- |                 | 14,040       |
| Total value -----         |                 | \$1,046,307  |

### SISKIYOU

*Land area:* 6256 square miles.

*Population:* 25,505 (1930 census).

*Location:* Extreme north-central portion of state, next to Oregon boundary.

*County seat:* Yreka.

*References:* State Mineralogist Report XIV: XVII: XVIII: XIX: XX: XXI (Oct., 1925): XXVIII (Jan., 1931): XXIX: XXX.

Siskiyou, fifth county in California in regard to size, located in a highly mineralized and mountainous country, ranks twenty-seventh in regard to mineral output with nine mineral substances for 1934. The 1933 production was valued at \$374,178.

Commercial production for 1934 was as follows:

| <i>Substance</i>          | <i>Amount</i>   | <i>Value</i> |
|---------------------------|-----------------|--------------|
| Gold-----                 |                 | \$528,395    |
| Silver-----               | 2,879 fine ozs. | 1,861        |
| Stone, miscellaneous----- |                 | 67,216       |
| Other minerals *-----     |                 | 50,694       |
| Total value -----         |                 | \$648,166    |

\* Includes copper, lead, mineral water, pumice, tube-mill pebbles.

### SOLANO

*Land area:* 822 square miles.

*Population:* 40,807 (1930 census).

*Location:* Touching San Francisco Bay on the northeast.

*County seat:* Fairfield.

*References:* State Mineralogist Report XIV: XVII: XVIII: XXIII (April, 1927).

Solano, while mostly valley land, produced mineral substances during the year 1934 to the total value of \$23,641, ranking it fifty-sixth among the counties of the State, compared with the 1933 output worth \$16,996.

Commercial production was as follows:

| <i>Substance</i>     | <i>Value</i> |
|----------------------|--------------|
| Unapportioned *----- | \$23,641     |

\* Includes onyx marble, travertine, miscellaneous stone.

### SONOMA

*Land area:* 1577 square miles.

*Population:* 62,248 (1930 census).

*Location:* South of Mendocino County, bordering on the Pacific Ocean.



**County seat:** Santa Rosa.

**References:** State Mineralogist Report XIV: XVII: XVIII: XXII (July, 1926).

Sonoma County ranks forty-second among the counties of California, during 1934, with a mineral output valued at \$162,005, as compared with the 1933 figures of \$157,988.

Commercial production for 1934 was as follows:

| <i>Substance</i>          | <i>Amount</i> | <i>Value</i> |
|---------------------------|---------------|--------------|
| Mineral water-----        | 12,944 gals.  | \$2,786      |
| Quicksilver-----          | 393 flasks    | 27,228       |
| Stone, miscellaneous----- | -----         | 130,616      |
| Unapportioned-----        | -----         | 1,375        |
| Total value -----         | -----         | \$162,005    |

### STANISLAUS

**Land area:** 1450 square miles.

**Population:** 56,624 (1930 census).

**Location:** Center of State, bounded on south by Merced County.

**County seat:** Modesto.

**References:** State Mineralogist Report XIV: XVII: XVIII: XXI (April, 1925).

Gold has usually been the chief mineral product of Stanislaus County, but it was exceeded in 1918-1919 by manganese, and in 1921-1923 and 1925-1930 by miscellaneous stone. This county for 1934 ranked thirty-first in the State in regard to minerals, with an output valued at \$418,172, as compared with \$298,847 in 1933.

Commercial production for 1934 was as follows:

| <i>Substance</i>          | <i>Amount</i> | <i>Value</i> |
|---------------------------|---------------|--------------|
| Gold-----                 | -----         | \$239,158    |
| Silver-----               | 841 fine ozs. | 544          |
| Stone, miscellaneous----- | -----         | 63,337       |
| Other minerals *-----     | -----         | 115,133      |
| Total value -----         | -----         | \$418,172    |

\* Includes clay (pottery), magnesite, platinum.

### SUTTER

**Land area:** 608 square miles.

**Population:** 14,618 (1930 census).

**Location:** Bounded by Butte County on the north and Sacramento on the south.

**County seat:** Yuba City.

**References:** State Mineralogist Report XV: XVII: XVIII.

Sutter is one of only two counties in the State which for a number of years reported no commercial output of some kind of mineral substance. In 1917 some crushed rock was taken out, from the Marysville Buttes, also in 1925-1928.

There has been some utilization of natural gas. Both clay and coal exist here, but deposits of neither mineral have been placed on a productive basis. During 1934, there was a mineral output, which was valued at \$3,322.

**TEHAMA**

*Land area:* 2893 square miles.

*Population:* 13,839 (1930 census).

*Location:* North-central portion of the State, bounded on the north by Shasta.

*County seat:* Red Bluff.

*References:* State Mineralogist Report XV: XVII: XVIII: XIX: XXIV (July, 1928).

Tehama County stands fiftieth among the mineral producing counties of the State for 1934, with an output valued at \$39,575, as compared with the 1933 yield worth \$30,334.

Commercial production for 1934 was as follows:

| <i>Substance</i>          | <i>Amount</i> | <i>Value</i> |
|---------------------------|---------------|--------------|
| Gold-----                 | -----         | \$1,146      |
| Silver-----               | 2 fine ozs.   | 1            |
| Stone, miscellaneous----- | -----         | 38,427       |
| Total value -----         | -----         | \$39,575     |

**TRINITY**

*Land area:* 3166 square miles.

*Population:* 2811 (1930 census).

*Location:* Northwestern portion of State.

*County seat:* Weaverville.

*References:* State Mineralogist Report XIV: XVII: XVIII: XIX: XX: XXII (Jan., 1926): XXIX (Jan., April, 1933): XXX.

Trinity County's 1934 output of minerals was valued at \$650,620, as compared with the 1933 figures of \$359,503, mainly due to gold which gives the county the rank of twenty-sixth for the year.

Commercial production for 1934 was as follows:

| <i>Substance</i>          | <i>Amount</i>   | <i>Value</i> |
|---------------------------|-----------------|--------------|
| Copper-----               | 359 lbs.        | \$29         |
| Gold-----                 | -----           | 574,681      |
| Silver-----               | 2,537 fine ozs. | 1,640        |
| Stone, miscellaneous----- | -----           | 62,522       |
| Other minerals *-----     | -----           | 11,748       |
| Total value -----         | -----           | \$650,620    |

\* Includes coal, platinum, quicksilver.

**TULARE**

*Land area:* 4856 square miles.

*Population:* 77,375 (1930 census).

*Location:* Bounded by Inyo on the east, Kern on the south, Fresno on the north.

*County seat:* Visalia.

*References:* State Mineralogist Report XV: XVII: XVIII: XX.

Tulare County stands thirty-ninth on the list of mineral producing counties for 1934, with eleven different mineral substances, having a total value of \$184,474, as compared with the 1933 figures of \$178,613.

Commercial production for 1934 was as follows:

| <i>Substance</i>           | <i>Amount</i> | <i>Value</i> |
|----------------------------|---------------|--------------|
| Copper -----               | 404 lbs.      | \$32         |
| Gold -----                 |               | 5,114        |
| Lead -----                 | 2,697 lbs.    | 100          |
| Silver -----               | 145 fine ozs. | 94           |
| Stone, miscellaneous ----- |               | 139,875      |
| Other minerals * -----     |               | 39,259       |
| Total value -----          |               | \$184,474    |

\* Includes barite, brick, petroleum, gems, tungsten ore.

### TUOLUMNE

*Land area:* 2190 square miles.

*Population:* 9239 (1930 census).

*Location:* East-central portion of State—Mother Lode District.

*County seat:* Sonora.

*References:* State Mineralogist Report XIV: XVII: XVIII: XIX: XX: XXIV (Jan., 1928).

Tuolumne County ranks thirtieth among the counties of the State relative to its total value of mineral output for 1934 with nine different substances. This county ranks first as a producer of marble in the State. The mineral production for 1934 was valued at \$423,588, as compared with \$264,979 for 1933.

Commercial production for 1934 was as follows:

| <i>Substance</i>           | <i>Amount</i>   | <i>Value</i> |
|----------------------------|-----------------|--------------|
| Gold -----                 |                 | \$269,256    |
| Silver -----               | 1,775 fine ozs. | 1,147        |
| Stone, miscellaneous ----- |                 | 5,578        |
| Other minerals * -----     |                 | 147,607      |
| Total value -----          |                 | \$423,588    |

\* Includes chromite, lime, limestone, marble, slate.

### VENTURA

*Land area:* 1878 square miles.

*Population:* 54,577 (1930 census).

*Location:* Southwestern portion of State, bordering on Pacific Ocean.

*County seat:* Ventura.

*References:* State Mineralogist Report XV: XVII: XVIII: XX: XXI: XXVIII (July-Oct., 1932).

Ventura is fifth county in the State in respect to the value of its mineral output for 1934. The 1934 mineral production was worth \$13,688,749, as compared with the 1933 output valued at \$14,558,096.

With ten different mineral substances, commercial production for 1934 was as follows:

| <i>Substance</i>           | <i>Amount</i>       | <i>Value</i> |
|----------------------------|---------------------|--------------|
| Gold -----                 |                     | \$4,435      |
| Natural gas -----          | 40,767,122 M cu. ft | 2,032,849    |
| Petroleum -----            | 12,007,550 bbls.    | 11,331,335   |
| Silver -----               | 10 fine ozs.        | 6            |
| Stone, miscellaneous ----- |                     | 291,845      |
| Other minerals * -----     |                     | 28,279       |
| Total value -----          |                     | \$13,688,749 |

\* Includes brick and hollow building tile, clay (oil-well drilling-mud), granite (flagstone), limestone (marl).

**YOLO**

*Land area:* 1017 square miles.

*Population:* 23,618 (1930 census).

*Location:* Sacramento Valley, bounded by Sutter on the east and Colusa on the north.

*County seat:* Woodland.

*References:* State Mineralogist Report XIV: XVII: XVIII.

Yolo County in fifty-first place has a commercial production for 1934 as follows, compared with \$16,823 for the preceding year:

| <i>Substance</i>           | <i>Amount</i> | <i>Value</i> |
|----------------------------|---------------|--------------|
| Gold -----                 | -----         | \$176        |
| Silver -----               | 1 fine oz.    | 1            |
| Stone, miscellaneous ----- | -----         | 37,850       |
| Total value -----          | -----         | \$38,027     |

**YUBA**

*Land area:* 639 square miles.

*Population:* 11,327 (1930 census).

*Location:* Lies west of Sierra and Nevada counties; south of Plumas.

*County seat:* Marysville.

*References:* State Mineralogist Report XV: XVII: XVIII: XX: XXVI (July, 1930).

Yuba County ranks fifteenth among the counties of the State as a mineral producer and fourth in respect to gold, which is obtained mainly by dredgers. The 1933 output was valued at \$1,150,962.

Commercial production for 1934 was as follows:

| <i>Substance</i>           | <i>Amount</i>   | <i>Value</i> |
|----------------------------|-----------------|--------------|
| Gold -----                 | -----           | \$1,911,960  |
| Silver -----               | 4,545 fine ozs. | 2,938        |
| Stone, miscellaneous ----- | -----           | 31,099       |
| Unapportioned -----        | -----           | 5,049        |
| Total value -----          | -----           | \$1,951,046  |

## CHAPTER EIGHT

## TOTAL RECORDED MINERAL PRODUCTION BY COUNTIES

Herein in the tabulations following we present the total mineral yield of each county of the state from the earliest available records to and including 1934. These tables were previously printed in the November, 1922, chapter of State Mineralogist's Report XVIII which included the data to the end of 1921; then in Bulletin 101, California Mineral Production for 1927, which included the data to the end of 1927.

In a number of cases it is known that there were productions of specific minerals in the years previous to the earliest years shown in these tabulations; but unfortunately, there are few detailed or accurate records showing county segregations prior to 1894 when compilation of the statistical records of the California State Mining Bureau began. For gold and silver, the published reports of the U. S. Geological Survey and the Director of the Mint give county segregations back to 1880; but, prior to that year, we have only the state total annually. In the case of quicksilver, there are authentic records for all of the important mines, from which we have compiled county tables for the early years.

The "unapportioned" column is necessitated by the fact that in many cases there is but a single operator or mine producing a given mineral in the county. As it is the policy of the Division of Mines not to reveal the individual's private business without his consent, we combine the values of such products.

## MINERAL PRODUCTION OF

| Year      | Brick      |              | Chromite |          | Pottery clay |           | Coal    |             | Manganese |           |
|-----------|------------|--------------|----------|----------|--------------|-----------|---------|-------------|-----------|-----------|
|           | M          | Value        | Tons     | Value    | Tons         | Value     | Tons    | Value       | Tons      | Value     |
| 1890..... |            |              | 397      | \$534    |              |           |         |             | 1         |           |
| 1891..... |            |              | 257      | 344      |              |           |         |             |           |           |
| 1892..... |            |              |          |          |              |           |         |             |           |           |
| 1893..... |            |              |          |          |              |           |         |             |           |           |
| 1894..... | 7,500      | \$37,500     |          |          |              |           |         |             | 468       | \$4,962   |
| 1895..... | 12,000     | 60,000       |          |          |              |           |         |             | 600       | 5,400     |
| 1896..... | 7,000      | 35,000       |          |          |              |           |         |             | 318       | 3,415     |
| 1897..... | 6,500      | 35,750       |          |          |              |           | 21,900  | \$50,370    | 504       | 4,080     |
| 1898..... | 7,000      | 35,000       |          |          |              |           | 70,500  | 176,250     | 440       | 2,102     |
| 1899..... | 10,000     | 60,000       |          |          |              |           | 80,703  | 242,109     | 290       | 3,090     |
| 1900..... | 5,000      | 40,000       |          |          |              |           | 91,731  | 332,066     | 130       | 1,300     |
| 1901..... | 9,590      | 67,130       |          |          |              |           | 87,424  | 262,272     | 423       | 4,365     |
| 1902..... | 10,000     | 60,000       |          |          |              |           | 67,850  | 203,550     | 870       | 7,140     |
| 1903..... | 10,300     | 82,400       |          |          |              |           | "       |             |           |           |
| 1904..... | 10,500     | 90,000       |          |          |              |           | "       |             | 60        | 900       |
| 1905..... | 12,000     | 95,500       |          |          |              |           |         |             |           |           |
| 1906..... | 21,345     | 413,750      |          |          | 10,000       | \$10,000  |         |             |           |           |
| 1907..... | 28,770     | 474,350      |          |          | 12,610       | 14,299    |         |             |           |           |
| 1908..... | 1,800      | 10,800       | 70       | 595      | 16,370       | 44,822    |         |             | 260       | 4,680     |
| 1909..... | 14,800     | 140,000      | "        |          | 45,348       | 205,194   |         |             |           |           |
| 1910..... | 20,919     | 195,889      | 69       | 552      | 9,541        | 63,925    |         |             |           |           |
| 1911..... | 19,660     | 153,330      | 60       | 500      | 10,500       | 8,300     |         |             |           |           |
| 1912..... | 12,800     | 133,100      |          |          |              |           |         |             | 20        | 360       |
| 1913..... | 13,977     | 122,937      |          |          | 3,000        | 2,700     |         |             |           |           |
| 1914..... | 22,668     | 159,205      |          |          | 5,000        | 1,000     |         |             |           |           |
| 1915..... | 14,841     | 132,765      |          |          |              |           |         |             | 319       | 3,652     |
| 1916..... | 23,551     | 315,941      | 612      | 7,344    | 4,060        | 2,750     |         |             | 562       | 9,005     |
| 1917..... | and tile.. | 290,033      | 52       | 960      | 6,502        | 4,524     |         |             | 1,211     | 30,250    |
| 1918..... |            | 258,812      | 220      | 14,600   | 2,675        | 3,850     |         |             | 2,746     | 109,874   |
| 1919..... |            | 369,778      | 80       | 1,264    | 5,011        | 12,127    |         |             | "         |           |
| 1920..... |            | 664,918      |          |          | 3,001        | 3,762     |         |             | "         |           |
| 1921..... |            | 365,853      |          |          | 6,079        | 7,405     |         |             | "         |           |
| 1922..... |            | "            |          |          | "            |           |         |             | 130       | 1,020     |
| 1923..... |            | 828,048      |          |          | 2,850        | 10,422    |         |             |           |           |
| 1924..... |            | 763,476      |          |          | 2,482        | 1,124     |         |             |           |           |
| 1925..... |            | 938,375      |          |          | 9,300        | 11,376    |         |             |           |           |
| 1926..... |            | 808,779      |          |          | 5,870        | 7,183     |         |             |           |           |
| 1927..... |            | 587,402      |          |          | 6,593        | 20,516    |         |             |           |           |
| 1928..... |            | 505,386      |          |          | 27,189       | 17,071    |         |             |           |           |
| 1929..... |            | 304,326      |          |          | 7,037        | 6,980     |         |             |           |           |
| 1930..... |            | 307,712      |          |          | 10,103       | 20,063    |         |             |           |           |
| 1931..... |            | 248,569      |          |          | 5,505        | 3,048     |         |             |           |           |
| 1932..... |            | 161,001      |          |          | 7,333        | 4,887     |         |             |           |           |
| 1933..... |            | 179,152      |          |          | 4,101        | 3,946     |         |             |           |           |
| 1934..... |            | 192,527      |          |          | "            |           |         |             |           |           |
| Totals..  |            | \$10,724,494 | 1,817    | \$26,693 | 228,060      | \$491,274 | 420,108 | \$1,266,617 | 9,351     | \$195,595 |

\*There was some production of chromite, manganese and salt in Alameda County in the years previous to those here shown but the separate county figures are not available.

\*Includes crushed rock, macadam, ballast, rubble, rip-rap, sand, gravel.

\*See under 'Unapportioned.'

## ALAMEDA COUNTY, 1890-1934

| Pyrites  |             | Salt      |              | Miscellaneous stone, <sup>a</sup> value | Miscellaneous and unapportioned |             |   |
|----------|-------------|-----------|--------------|---|---------------------------------|-------------|---|
| Tons     | Value       | Tons      | Value        |   | Amount                          | Value       | Substance   |
| -----    | -----       | -----     | -----        | -----                                   | -----                           | -----       | -----   |
| -----    | -----       | -----     | -----        | -----                                   | -----                           | -----       | -----   |
| -----    | -----       | -----     | -----        | -----                                   | -----                           | -----       | -----   |
| -----    | -----       | 44,450    | \$125,125    | \$73,463                                | 1,265 cu. ft.                   | \$1,000     | Building stone  |
| -----    | -----       | 43,810    | 114,575      | 94,372                                  | 500 cu. ft.                     | 300         | Sandstone.  |
| -----    | -----       | 55,826    | 122,810      | 89,405                                  | -----                           | -----       | -----   |
| -----    | -----       | 61,353    | 139,830      | 73,300                                  | 2,000 cu. ft.                   | 750         | Sandstone.  |
| -----    | -----       | 87,800    | 155,812      | 73,845                                  | 30 tons                         | 180         | Magnesite.  |
| -----    | -----       | 78,434    | 137,083      | 66,512                                  | 13,728 lbs.                     | 2,162       | Copper.   |
| -----    | -----       | 64,718    | 153,674      | 107,551                                 | 190 tons                        | 1,100       | Magnesite.  |
| 4,500    | \$18,000    | 114,450   | 324,136      | 107,201                                 | 1,500 lbs.                      | 52          | Lead.   |
| 14,323   | 53,301      | 80,000    | 160,000      | 182,295                                 | 100 tons                        | 500         | Magnesite.  |
| 21,811   | 88,500      | 76,877    | 143,605      | 200,702                                 | 10,000 tons                     | 15,000      | Lime.   |
| 15,043   | 62,992      | 52,990    | 76,340       | 284,181                                 | -----                           | -----       | -----   |
| 15,503   | 63,958      | 49,100    | 54,200       | 449,029                                 | 500 tons                        | 1,750       | Glass sand.   |
| 14,000   | 56,000      | 68,450    | 126,838      | 496,482                                 | 1,416 tons                      | 14,400      | Asphalt.  |
| 16,482   | 54,410      | 54,922    | 163,127      | 512,607                                 | 11,943 tons                     | 143,376     | Asphalt.  |
| 13,404   | 70,782      | 78,462    | 108,694      | 465,653                                 | 3 tons                          | 48          | Soapstone.  |
| 8,105    | 40,516      | 104,978   | 214,808      | 340,208                                 | 250 tons                        | 625         | Glass sand.   |
| 10,938   | 53,170      | 131,868   | 285,217      | 408,591                                 | 18,290 tons                     | 241,475     | Asphalt.  |
| 6,340    | 31,352      | 121,540   | 201,542      | 404,615                                 | 18,290 tons                     | 233,032     | Unapportioned, 1900-09, inclusive.                            |
| 7,267    | 29,068      | 126,211   | 212,150      | 420,283                                 | 40 tons                         | 197,783     | Asphalt.  |
| 6,029    | 24,128      | 129,318   | 233,388      | 456,064                                 | -----                           | 260         | Soapstone.  |
| 9,829    | 34,696      | 126,983   | 292,641      | 381,135                                 | 5,000 bbls.                     | 5,000       | Lime.   |
| 11,287   | 45,148      | 103,768   | 220,977      | 457,381                                 | 50 tons                         | 250         | Limestone.  |
| 16,394   | 65,110      | 111,206   | 263,773      | 403,587                                 | 150 tons                        | 1,500       | Magnesite.  |
| "        | -----       | 148,846   | 315,970      | 413,845                                 | 10 tons                         | 20          | Limestone   |
| 9,113    | 45,565      | 130,132   | 410,345      | 311,320                                 | -----                           | 1,740       | Asbestos, chromite, pottery clay.                             |
| 8,978    | 42,902      | 157,751   | 552,178      | 309,572                                 | -----                           | 26,657      | Limestone, magnesium chloride, magnesite.                     |
| 10,602   | 55,251      | 145,368   | 574,837      | 620,758                                 | -----                           | 83,141      | Lime, limestone, magnesite, magnesium salts, potash, pyrites. |
| 13,449   | 70,669      | 108,925   | 370,296      | 513,641                                 | -----                           | 19,169      | Asbestos, magnesium salts, potash, limestone.                 |
| "        | -----       | 139,556   | 434,076      | 760,422                                 | -----                           | 16,864      | Magnesium salts, manganese, potash.                           |
| "        | -----       | 177,389   | 585,585      | 965,465                                 | -----                           | 28,354      | Magnesium salts, manganese, mineral paint, potash.            |
| "        | -----       | 189,217   | 635,653      | 1,158,886                               | -----                           | 25,826      | Magnesium salts, manganese, mineral paint, potash.            |
| "        | -----       | 180,712   | 497,692      | 1,414,398                               | -----                           | 845,936     | Brick, hollow building tile, magnesium, salt, pyrite.         |
| "        | -----       | 202,777   | 628,470      | 1,642,618                               | -----                           | 97,515      | Magnesium salts, pyrite.                                      |
| "        | -----       | 180,623   | 366,346      | 1,538,017                               | -----                           | 75,506      | Magnesium salts, potash, pyrite.                              |
| "        | -----       | 224,000   | 611,888      | 1,267,155                               | -----                           | 54,665      | Magnesium salts, potash, pyrite.                              |
| "        | -----       | 264,666   | 1,623,397    | 1,592,232                               | -----                           | 71,414      | Bromine, magnesium salts, pyrite.                             |
| "        | -----       | 232,808   | 694,371      | 1,436,608                               | -----                           | 65,506      | Magnesium salts, potash, pyrite.                              |
| "        | -----       | "         | "            | 1,008,124                               | 321,844 lbs.                    | 20,330      | Pyrite, travertine.   |
| "        | -----       | "         | "            | 813,165                                 | 104 fine oz.                    | 48,016      | Copper.   |
| "        | -----       | "         | "            | 649,105                                 | 41 fine oz.                     | 55          | Silver.   |
| "        | -----       | "         | "            | 1,090,371                               | -----                           | 51,717      | Mineral paint, pyrite.  |
| "        | -----       | "         | "            | "                                       | -----                           | 16          | Silver.   |
| "        | -----       | "         | "            | "                                       | -----                           | 70,567      | Copper, pyrite.   |
| "        | -----       | "         | "            | "                                       | 12,545 lbs.                     | 1,158,184   | Bromine, limestone (shells).                                  |
| "        | -----       | "         | "            | "                                       | 49 fine oz.                     | 790         | Copper pyrite, salt.  |
| "        | -----       | "         | "            | "                                       | -----                           | 14          | Silver.   |
| "        | -----       | "         | "            | "                                       | -----                           | 785,282     | Limestone (shells), pyrite.                                   |
| "        | -----       | "         | "            | "                                       | -----                           | 1,097,908   | Lime, limestone (shells), mineral paint, pyrite, salt.        |
| "        | -----       | "         | "            | "                                       | -----                           | 1,066,735   | Clay (pottery), bromine, lime, limestone, pyrite, salt.       |
| *233,697 | \$1,005,527 | 4,450,284 | \$12,336,454 | \$24,034,164                            | -----                           | \$6,602,470 | -----   |

## MINERAL PRODUCTION OF ALPINE COUNTY, 1880-1934

| Year   | Gold,<br>value | Silver,<br>value | Copper  |          | Miscellaneous and unapportioned |                                |
|--------|----------------|------------------|---------|----------|---------------------------------|--------------------------------|
|        |                |                  | Pounds  | Value    | Value                           | Substance                      |
| 1880   | \$17,133       | \$24,146         |         |          |                                 |                                |
| 1881   | 2,000          | 2,100            |         |          |                                 |                                |
| 1882   | 20,000         | 10,000           | 70,895  | \$18,115 |                                 |                                |
| 1883   | 10,000         | 5,000            | 1       |          |                                 |                                |
| 1884   | 5,000          | 4,000            |         |          |                                 |                                |
| 1885   |                |                  |         |          |                                 |                                |
| 1896   | 400            |                  |         |          |                                 |                                |
| 1897   |                |                  |         |          |                                 |                                |
| 1901   | 23,568         | 2,860            | 8,377   | 1,319    |                                 |                                |
| 1902   | 10,359         | 3,770            |         |          |                                 |                                |
| 1903   | 2,701          | 146              |         |          |                                 |                                |
| 1904   | 4,827          | 145              |         |          |                                 |                                |
| 1905   | 575            |                  |         |          |                                 |                                |
| 1909   |                |                  |         |          | \$5,465                         | Unapportioned, 1900-1909.      |
| 1913   | 537            | 4                |         |          |                                 |                                |
| 1914   |                |                  |         |          |                                 |                                |
| 1919   |                |                  |         |          | 100                             | Crushed rock.                  |
| 1920   |                |                  |         |          | 680                             | Miscellaneous stone.           |
|        |                |                  |         |          | 160                             | Gold and silver.               |
| 1921   |                |                  |         |          | 925                             | Miscellaneous stone.           |
| 1922   |                |                  |         |          | 2,800                           | Miscellaneous stone.           |
| 1923   |                |                  |         |          |                                 | No commercial production.      |
| 1924   |                |                  |         |          | 2,552                           | Lead and stone, miscellaneous. |
| 1925   |                |                  |         |          | 520                             | Miscellaneous stone.           |
| 1926   |                |                  |         |          | 450                             | Miscellaneous stone.           |
| 1927   | 146            | 60               |         |          | 5,100                           | Miscellaneous stone.           |
|        |                |                  |         |          | 174                             | Lead.                          |
| 1928   | 23             | 363              |         |          | 2,800                           | Miscellaneous stone.           |
|        |                |                  |         |          | 5,169                           | Copper and granite.            |
| 1929   |                |                  | 7,260   | 1,278    | 31,735                          | Miscellaneous stone.           |
| 1930   |                |                  |         |          | 2,500                           | Miscellaneous stone.           |
| 1931   | 16             | 13               |         |          |                                 |                                |
| 1932   | 647            | 241              |         |          | 1,100                           | Miscellaneous stone.           |
|        |                |                  |         |          | 7                               | Copper, lead.                  |
| 1933   | 1,651          | 1,091            | 323     | 21       | 43                              | Lead (1,169 lbs.).             |
|        |                |                  |         |          | 9,918                           | Unapportioned.                 |
| 1934   | 3,726          | 2,371            | 448     | 36       | 58                              | Lead (1,564 lbs.).             |
|        |                |                  |         |          | 8,856                           | Unapportioned.                 |
| Totals | \$103,309      | \$56,310         | *87,303 | \$15,769 | \$81,112                        |                                |

\* "Small production of cement copper" reported in 1883, but record does not show exact figures.

\* Under 'Unapportioned.'





MINERAL PRODUCTION OF

| Year | Gold,<br>value | Silver,<br>value | Coal   |          | Copper  |         | Pottery clay |         | Lime    |         |
|------|----------------|------------------|--------|----------|---------|---------|--------------|---------|---------|---------|
|      |                |                  | Tons   | Value    | Pounds  | Value   | Tons         | Value   | Barrels | Value   |
| 1880 | \$1,495,053    | \$1,953          |        |          |         |         |              |         |         |         |
| 1881 | 1,450,000      | 1,500            |        |          |         |         |              |         |         |         |
| 1882 | 1,500,000      |                  |        |          |         |         |              |         |         |         |
| 1883 | 1,590,000      |                  |        |          |         |         |              |         |         |         |
| 1884 | 2,000,000      | 2,000            |        |          |         |         |              |         |         |         |
| 1885 | 2,145,591      | 3,700            |        |          |         |         |              |         |         |         |
| 1886 | 1,874,062      | 6,136            |        |          |         |         |              |         |         |         |
| 1887 | 1,979,956      | 2,069            |        |          |         |         |              |         |         |         |
| 1888 | 1,750,000      | 3,500            | 24,404 | \$36,606 |         |         |              |         |         |         |
| 1889 | 1,560,975      | 6,398            | 30,000 | 45,000   |         |         |              |         |         |         |
| 1890 | 1,459,952      | 9,357            |        |          |         |         |              |         |         |         |
| 1891 | 1,395,962      | 13,895           | 21,323 | 31,984   |         |         |              |         |         |         |
| 1892 | 1,210,383      | 8,008            |        |          |         |         |              |         |         |         |
| 1893 | 1,505,973      | 5,230            |        |          |         |         |              |         |         |         |
| 1894 | 1,331,916      | 280              | 15,280 | 23,020   |         |         | 2,500        | \$3,000 |         |         |
| 1895 | 1,391,929      | 1,089            | 21,323 | 31,985   | 16,500  | \$1,650 | 9,960        | 10,285  |         |         |
| 1896 | 1,523,351      | 3,767            | 19,775 | 29,662   | 30,000  | 3,000   | 8,413        | 27,825  |         |         |
| 1897 | 1,324,472      | 3,477            | 20,000 | 25,000   |         |         | 3,492        | 9,540   |         |         |
| 1898 | 1,806,363      | 1,742            | 18,500 | 29,550   | 3,000   | 300     | 7,197        | 8,297   |         |         |
| 1899 | 1,544,868      | 6,902            | 18,500 | 23,125   |         |         | 10,700       | 10,900  |         |         |
| 1900 | 1,373,788      | 14,915           | 27,477 | 41,215   | 220,000 | 34,100  | 11,500       | 9,100   |         |         |
| 1901 | 1,823,827      | 7,444            | 25,000 | 30,000   | 52,000  | 8,190   | 10,050       | 7,100   |         |         |
| 1902 | 1,629,151      | 2,686            | 5,450  | 10,912   | 130,000 | 14,620  | 12,723       | 13,728  |         |         |
| 1903 | 1,609,744      | 4,336            |        |          | 10,000  | 900     | 22,000       | 19,460  |         |         |
| 1904 | 2,060,574      | 4,055            |        |          | 14,000  | 1,400   | 20,608       | 10,770  | 1,700   | \$1,700 |
| 1905 | 2,445,815      | 17,930           |        |          | 10,000  | 1,560   | 21,775       | 20,000  | 1,000   | 1,500   |
| 1906 | 2,260,373      | 14,579           |        |          | 8,648   | 1,669   | 26,789       | 28,119  | 1,000   | 1,200   |
| 1907 | 2,116,182      | 13,515           |        |          | 5,300   | 1,020   | 12,465       | 13,992  |         |         |
| 1908 | 1,876,175      | 13,239           |        |          | 53,940  | 3,440   | 23,322       | 25,369  | 800     | 960     |
| 1909 | 2,298,785      | 16,701           |        |          | 288,472 | 36,641  | 33,563       | 32,724  | 1,200   | 1,440   |
| 1910 | 2,646,246      | 20,916           |        |          | 151,484 | 14,386  | 39,446       | 49,339  | 1,400   | 1,680   |
| 1911 | 2,832,395      | 28,899           |        |          | 227,848 | 28,481  | 43,352       | 37,359  | 1,200   | 1,500   |
| 1912 | 2,796,194      | 32,037           |        |          | 175,808 | 28,975  | 35,100       | 36,856  | 800     | 1,040   |
| 1913 | 2,901,898      | 18,097           |        |          | 19,023  | 2,949   | 39,678       | 38,653  | 1,000   | 1,200   |
| 1914 | 3,082,002      | 17,032           | 5,700  | 10,062   | 5,251   | 694     | 32,223       | 33,114  | 1,540   | 2,008   |
| 1915 | 3,894,125      | 20,409           |        |          | 4,185   | 732     | 40,156       | 38,879  | 1,000   | 1,200   |
| 1916 | 3,660,550      | 18,705           | 1      |          | 12,349  | 3,038   | 29,246       | 31,106  | 1       |         |
| 1917 | 3,664,164      | 21,358           | 1      |          | 19,352  | 5,283   | 28,970       | 28,625  |         |         |
| 1918 | 3,249,385      | 29,590           | 1      |          | 1       |         | 13,562       | 34,346  |         |         |
| 1919 | 2,920,492      | 33,254           | 1      |          |         |         | 1            |         |         |         |
| 1920 | 1,788,793      | 19,780           | 1      |          |         |         | 25,719       | 61,808  |         |         |
| 1921 | 2,167,443      | 35,460           |        |          |         |         | 22,124       | 46,664  |         |         |

1 See under "Unapportioned."

| Marble  |          | Brick    |         | Miscellaneous and unapportioned |           |   |
|---------|----------|----------|---------|---------------------------------|-----------|---|
| Cu. ft. | Value    | M        | Value   | Amount                          | Value     | Substance   |
| 25,941  | \$35,826 |          |         |                                 |           |   |
| 4,864   | 6,566    |          |         |                                 |           |   |
| 4,389   | 5,415    |          |         |                                 |           |   |
| 3,864   | 6,280    |          |         |                                 |           |   |
| 2,850   | 3,594    |          |         |                                 |           |   |
| 4,582   | 7,925    |          |         |                                 |           |   |
| 4,103   | 5,891    |          |         |                                 |           |   |
| 2,945   | 4,630    | 600      | \$7,000 |                                 | \$318,422 | Unapportioned, 1900-1909                          |
| 6,300   | 8,016    |          |         |                                 |           |   |
| 3,074   | 5,379    |          |         |                                 |           |   |
| 4,785   | 6,558    |          |         |                                 | 750       | Glass sand.                                       |
| 2,703   | 3,950    |          |         |                                 |           |   |
|         |          |          |         | 1,000 tons                      | 1,200     | Limestone.  |
|         |          |          |         | 10 tons                         | 1,000     | Asbestos.   |
|         |          | 2,109    | 61,369  | 1,072 lbs.                      | 40        | Lead.   |
|         |          |          |         | 1,000 tons                      | 1,375     | Limestone.  |
|         |          | 1,429    | 28,572  | 2 tons                          | 200       | Asbestos.   |
|         |          |          |         | 41 tons                         | 332       | Chromite.   |
|         |          |          |         | 1,000 tons                      | 1,500     | Limestone.  |
|         |          | 2,000    | 30,000  | 10,100 tons                     | 10,100    | Quartz sand.                                      |
|         |          |          |         | 11,200 cu. ft.                  | 5,600     | Sandstone.  |
|         |          | 2,000    | 20,000  | 600 tons                        | 6,000     | Soapstone.  |
|         |          | 2,500    | 25,000  | 90,000 cu. ft.                  | 45,000    | Sandstone.  |
|         |          |          |         | 6,000 cu. ft.                   | 3,000     | Sandstone.  |
|         |          |          |         | 700 tons                        | 2,100     | Soapstone.  |
|         |          |          |         | 2,500 cu. ft.                   | 2,500     | Sandstone.  |
|         |          |          |         | 350 tons                        | 2,420     | Soapstone.  |
|         |          | 2,000    | 30,000  | 1,960 tons                      | 3,556     | Quartz.   |
|         |          |          |         | 877 tons                        | 670       | Glass sand.                                       |
|         |          |          |         |                                 | 670       | Miscellaneous stone.                              |
|         |          |          |         |                                 | 11,237    | Other minerals.                                   |
|         |          |          |         | 16,888 tons                     | 9,855     | Glass sand.                                       |
|         |          |          |         | 44 lbs.                         | 2         | Lead.   |
|         |          | 2,500    | 50,000  | 6,250 tons                      | 2,400     | Quartz.   |
|         |          |          |         | 3,960 cu. ft.                   | 1,500     | Sandstone.  |
|         |          |          |         | 610 tons                        | 2,440     | Soapstone.  |
|         |          |          |         | 523 lbs.                        | 25        | Lead.   |
|         |          | 4,000    | 80,000  | 13,339 tons                     | 16,142    | Silica.   |
|         |          |          |         |                                 | 1,300     | Miscellaneous stone.                              |
|         |          |          |         |                                 | 10,950    | Other minerals.                                   |
|         |          |          |         | 300 tons                        | 3,700     | Chromite  |
|         |          |          |         | 4,341 tons                      | 12,802    | Silica.   |
|         |          |          |         | 495 tons                        | 2,475     | Soapstone.  |
|         |          |          |         |                                 | 1,300     | Miscellaneous stone.                              |
|         |          | and tile |         |                                 | 77,752    | Brick, coal, lime, manganese, sandstone.          |
|         |          |          |         |                                 | 1,420     | Chromite.   |
|         |          |          |         | 65 tons                         | 20,766    | Silica.   |
|         |          | 95,345   |         | 4,771 tons                      | 1,200     | Miscellaneous stone.                              |
|         |          |          |         |                                 | 13,033    | Coal, lead, manganese, platinum, soapstone, zinc. |
|         |          |          |         | 88 tons                         | 4,400     | Chromite.   |
|         |          |          |         | 13,747 tons                     | 61,724    | Silica.   |
|         |          |          |         |                                 | 6,500     | Miscellaneous stone.                              |
|         |          |          |         |                                 | 66,695    | Brick, coal, copper, manganese, mineral paint     |
|         |          |          |         |                                 |           | platinum, soapstone.                              |
|         |          |          |         |                                 | 142,523   | Clay and clay products.                           |
|         |          |          |         | 8,440 tons                      | 67,366    | Silica.   |
|         |          |          |         |                                 | 9,953     | Coal, manganese, platinum, sandstone, soapstone   |
|         |          |          |         | 6,116 tons                      | 36,432    | Silica.   |
|         |          |          |         |                                 | 680       | Miscellaneous stone.                              |
|         |          |          |         |                                 | 102,707   | Brick, coal, mineral paint, platinum, soapstone.  |
|         |          |          |         | 1,802 tons                      | 20,646    | Silica.   |
|         |          |          |         |                                 | 1,125     | Miscellaneous stone.                              |
|         |          |          |         |                                 | 97,126    | Brick and platinum.                               |

## MINERAL PRODUCTION OF

| Year        | Gold,<br>value | Silver,<br>value | Coal    |           | Copper    |           | Pottery clay |             | Lime    |          |
|-------------|----------------|------------------|---------|-----------|-----------|-----------|--------------|-------------|---------|----------|
|             |                |                  | Tons    | Value     | Pounds    | Value     | Tons         | Value       | Barrels | Value    |
| 1922.....   | \$2,241,100    | \$32,287         |         |           |           |           | 39,572       | \$68,126    |         |          |
| 1923.....   | 1,734,133      | 15,153           |         |           |           |           | 45,887       | 58,196      |         |          |
| 1924.....   | 2,706,508      | 18,251           | 1       |           | 1         |           | 64,317       | 87,444      |         |          |
| 1925.....   | 2,338,101      | 16,123           | 1       |           | 1         |           | 63,889       | 95,946      |         |          |
| 1926.....   | 2,167,275      | 13,422           | 1       |           | 1         |           |              |             |         |          |
| 1927.....   | 1,922,714      | 11,319           | 1       |           | 1         |           | 118,636      | 165,210     | 1       |          |
| 1928.....   | 2,236,922      | 14,317           | 1       |           | 1,402     | 202       | 96,209       | 116,000     |         |          |
| 1929.....   | 1,601,861      | 9,392            | 1       |           | 1         |           | 60,487       | 88,846      |         |          |
| 1930.....   | 1,840,191      | 7,100            | 1       |           | 1         |           | 74,023       | 103,160     |         |          |
| 1931.....   | 1,549,073      | 4,783            | 1       |           | 1         |           | 32,275       | 57,751      |         |          |
| 1932.....   | 1,307,760      | 3,865            | 1       |           | 1,454     | 92        | 20,284       | 26,373      |         |          |
| 1933.....   | 1,945,261      | 6,471            | 1       |           | 13,922    | 891       | 18,341       | 26,016      |         |          |
| 1934.....   | 2,274,275      | 10,544           | 1       |           | 7,254     | 580       | 28,620       | 50,833      |         |          |
| Totals..... | \$112,504,091  | \$648,867        | 252,732 | \$368,121 | 1,482,092 | \$194,793 | 1,249,173    | \$1,630,859 | 12,640  | \$15,428 |

<sup>1</sup> See under 'Unapportioned.'

<sup>2</sup> Includes brick and platinum.

<sup>3</sup> Includes brick and soapstone.

<sup>4</sup> Includes brick, coal, copper and lead.

<sup>5</sup> Includes coal, copper, lead and marble.

<sup>6</sup> Includes brick, coal, copper and silica.

## AMADOR COUNTY, 1880-1934—Continued

| Marble   |           | Brick |           | Miscellaneous and unapportioned |             |  |
|----------|-----------|-------|-----------|---------------------------------|-------------|--|
| Cu. ft.  | Value     | M     | Value     | Amount                          | Value       | Substance                                    |
|          |           |       |           | 865 tons                        | \$5,030     | Silica.                                      |
|          |           |       |           |                                 | 7,300       | Miscellaneous stone.                         |
|          |           |       |           |                                 | 125,220     | Other minerals.*                             |
|          |           |       |           |                                 | 28,515      | Miscellaneous stone.                         |
|          |           |       |           |                                 | 119,877     | Other minerals.*                             |
|          |           |       |           |                                 | 3,050       | Miscellaneous stone.                         |
|          |           |       |           |                                 | 123,612     | Other minerals.*                             |
|          |           |       |           |                                 | 31,100      | Miscellaneous stone.                         |
|          |           |       |           |                                 | 11,003      | Other minerals.*                             |
|          |           |       |           |                                 | 237,792     | Brick and clay (pottery).                    |
|          |           |       |           |                                 | 101         | Lead.  |
|          |           | 1     |           | 1,267 lbs.                      | 24,900      | Miscellaneous stone.                         |
|          |           |       |           |                                 | 8,010       | Other minerals.*                             |
|          |           |       |           | 2,491 lbs.                      | 157         | Lead.  |
|          |           | 1     |           |                                 | 10,400      | Miscellaneous stone.                         |
|          |           |       |           |                                 | 97,998      | Other minerals.*                             |
|          |           |       |           |                                 | 189,900     | Miscellaneous stone.                         |
|          |           |       |           |                                 | 86,838      | Brick, coal.                                 |
| 1        |           |       |           |                                 | 696,500     | Miscellaneous stone.                         |
|          |           |       |           |                                 | 101,618     | Brick, coal, copper, lead, marble.           |
| 1        |           |       |           |                                 | 388,129     | Miscellaneous stone.                         |
|          |           |       |           |                                 | 86,107      | Brick, coal, copper, lead, marble, platinum. |
| 1        |           |       |           |                                 | 491,456     | Miscellaneous stone.                         |
|          |           |       |           |                                 | 67,933      | Brick, coal, copper, lead, marble.           |
|          |           |       |           |                                 | 89          | Lead.  |
| 1        |           |       |           | 2,981 lbs.                      | 19,626      | Miscellaneous stone.                         |
|          |           |       |           |                                 | 42,481      | Brick, coal, marble.                         |
|          |           |       |           |                                 | 1,178       | Lead.  |
|          |           |       |           | 31,845 lbs.                     | 48,781      | Brick, coal, marble, miscellaneous stone.    |
|          |           |       |           |                                 | 223         | Lead.  |
|          |           |       |           | 6,102 lbs.                      | 12,115      | Miscellaneous stone.                         |
|          |           |       |           |                                 | 51,591      | Brick, coal, gems (diamonds).                |
| \$70,400 | \$100,030 |       | \$427,286 |                                 | \$4,276,521 |  |

| Year      | Diamonds,<br>value | Gold,<br>value | Mineral water |       | Platinum    |       |
|-----------|--------------------|----------------|---------------|-------|-------------|-------|
|           |                    |                | Gallons       | Value | Ounces      | Value |
| 1880..... |                    | \$430,501      |               |       |             |       |
| 1881..... |                    | 650,000        |               |       |             |       |
| 1882..... |                    | 650,000        |               |       |             |       |
| 1883..... |                    | 630,000        |               |       |             |       |
| 1884..... |                    | 680,000        |               |       |             |       |
| 1885..... |                    | 672,569        |               |       |             |       |
| 1886..... |                    | 728,160        |               |       |             |       |
| 1887..... |                    | 632,902        |               |       |             |       |
| 1888..... |                    | 550,000        |               |       |             |       |
| 1889..... |                    | 696,628        |               |       |             |       |
| 1890..... |                    | 268,977        |               |       |             |       |
| 1891..... |                    | 304,765        |               |       |             |       |
| 1892..... |                    | 316,999        |               |       |             |       |
| 1893..... |                    | 307,351        |               |       |             |       |
| 1894..... |                    | 473,673        |               |       |             |       |
| 1895..... |                    | 697,261        |               |       |             |       |
| 1896..... |                    | 749,316        | 1,900         | \$775 |             |       |
| 1897..... |                    | 667,025        | 2,160         | 900   |             |       |
| 1898..... |                    | 514,508        | 2,685         | 900   |             |       |
| 1899..... |                    | 486,846        | 2,480         | 1,240 |             |       |
| 1900..... |                    | 485,589        | 15,000        | 1,515 |             |       |
| 1901..... |                    | 864,978        | 10,400        | 1,455 |             |       |
| 1902..... |                    | 916,782        | 14,000        | 1,500 |             |       |
| 1903..... |                    | 1,571,507      | 13,000        | 1,550 | 14          | \$210 |
| 1904..... |                    | 1,932,552      | 12,600        | 1,512 | 66          | 1,000 |
| 1905..... |                    | 2,607,500      | 15,000        | 1,500 | 110         | 1,770 |
| 1906..... |                    | 3,016,747      | 19,500        | 1,950 | 26          | 475   |
| 1907..... |                    | 2,786,840      | 21,400        | 2,140 |             |       |
| 1908..... |                    | 3,139,398      | 22,450        | 2,450 |             |       |
| 1909..... |                    | 2,987,079      | 25,400        | 1,400 |             |       |
| 1910..... |                    | 2,487,791      |               |       |             |       |
| 1911..... | \$150              | 2,323,396      |               |       |             |       |
| 1912..... |                    | 2,346,229      |               |       |             |       |
| 1913..... | 175                | 2,269,849      | 1,000         | 250   |             |       |
| 1914..... | 100                | 1,700,000      | 1,200         | 300   | 119         | 381   |
| 1915..... | 300                | 1,545,976      | 5,000         | 850   | 126         | 3,997 |
| 1916..... | 357                | 1,257,231      | 3,150         | 1,125 | 76          | 3,472 |
| 1917..... | 125                | 922,271        | 3,500         | 1,450 | 119         | 9,106 |
| 1918..... | 125                | 645,975        | 3,900         | 1,680 | 114         | 7,723 |
| 1919..... |                    | 378,297        | 6,532         | 2,388 | 33          | 5,071 |
| 1920..... | 400                | 467,900        | 6,400         | 5,200 | fine oz. 42 | 4,714 |
| 1921..... | 331                | 456,760        | 2,900         | 4,100 | fine oz. 31 | 2,432 |
| 1922..... | 225                | 491,201        | 2,835         | 2,485 | fine oz. 30 | 3,826 |
| 1923..... |                    | 487,393        | 3,700         | 3,300 | fine oz. 19 | 2,601 |
| 1924..... |                    | 484,530        | 6,000         | 4,500 | fine oz. 20 | 2,829 |
| 1925..... |                    | 355,289        | 4,484         | 2,742 | fine oz. 56 | 9,177 |
| 1926..... | 175                | 287,853        |               |       | fine oz. 10 | 954   |
| 1927..... |                    | 143,494        |               |       |             |       |
| 1928..... |                    | 48,432         | 2,190         | 1,045 |             |       |
| 1929..... | \$550              | 71,917         |               |       |             |       |

<sup>1</sup> Includes crushed rock, rubble, rip-rap, sand and gravel.

<sup>2</sup> See under 'Unapportioned.'

<sup>3</sup> Includes diamonds, natural gas, soapstone.

<sup>4</sup> Includes natural gas and soapstone.

<sup>5</sup> Includes brick, copper, gems (diamonds), lead, natural gas, soapstone.

<sup>6</sup> Includes clay (pottery), mineral water, natural gas, soapstone.

<sup>7</sup> Includes copper, gems (diamonds, sapphires), natural gas and soapstone.

<sup>8</sup> Diamonds and precious serpentine.

<sup>9</sup> Includes brick, mineral water, natural gas and soapstone.

## BUTTE COUNTY, 1880-1934

| Silver,<br>value | Miscellaneous<br>stone, <sup>1</sup><br>value | Miscellaneous and unapportioned |         |                                      |
|------------------|---|---------------------------------|---------|--------------------------------------|
|                  |   | Amount                          | Value   | Substance                            |
| \$1,247          |   |                                 |         |                                      |
| 1,000            |   |                                 |         |                                      |
|                  |   |                                 |         |                                      |
|                  |   |                                 |         |                                      |
| 3,700            |   |                                 |         |                                      |
| 13               |   |                                 |         |                                      |
| 6                |   |                                 |         |                                      |
| 500              |   |                                 |         |                                      |
| 518              |   |                                 |         |                                      |
| 5,815            |   |                                 |         |                                      |
| 229              |   |                                 |         |                                      |
| 610              |   |                                 |         |                                      |
| 5,504            |   |                                 |         |                                      |
|                  |   |                                 |         |                                      |
| 8,936            |   |                                 |         |                                      |
| 5,390            |   |                                 |         |                                      |
| 7,885            |   | 700 M                           | \$4,200 | Brick.                               |
| 9,317            |   | 250 M                           | 1,500   | Brick.                               |
|                  |   | 150 tons                        | 3,000   | Mineral paint.                       |
| 5,009            |   | 300 M                           | 1,800   | Brick.                               |
|                  |   | 900 tons                        | 9,900   | Mineral paint.                       |
| 13,082           |   | 600 bbls.                       | 600     | Lime.                                |
| 4,634            |   | 900 M                           | 7,200   | Brick.                               |
|                  |   | 1,500 bbls.                     | 1,500   | Lime.                                |
| 2,219            |   | 800 M                           | 5,000   | Brick.                               |
|                  |   | 400 bbls.                       | 750     | Lime.                                |
| 358              |   | 1,200 M                         | 7,200   | Brick.                               |
|                  |   | 250 bbls.                       | 250     | Lime.                                |
| 2,302            |   | 190 tons                        | 250     | Limestone.                           |
| 7,134            |   | 670 M                           | 4,020   | Brick.                               |
| 10,853           |   | 400 M                           | 3,200   | Brick.                               |
| 8,967            |   | 130 M                           | 1,300   | Brick.                               |
| 12,708           | \$7,916                                       |                                 |         |                                      |
| 7,205            | 32,140  | 200 M                           | 1,200   | Brick.                               |
| 6,429            | 34,932  | 645 lbs.                        | 107,170 | Unapportioned, 1900-1909.            |
| 5,102            | 78,208  |                                 | 27      | Lead.                                |
| 5,567            | 51,879  |                                 |         |                                      |
| 5,163            | 258,503                                       |                                 |         |                                      |
| 4,000            | 50,895  | 513 lbs.                        | 20      | Lead.                                |
|                  |   | 90 lbs.                         | 4       | Lead.                                |
| 3,433            | 67,143  |                                 | 540     | Chromite.                            |
|                  |   | 11 lbs.                         | 2       | Copper.                              |
| 3,332            | 67,892  | 1,451 tons                      | 13,940  | Chromite.                            |
|                  |   |                                 | 9,576   | Other minerals.                      |
| 2,991            | 89,870  | 5,746 tons                      | 104,085 | Chromite.                            |
|                  |   | 378 lbs.                        | 32      | Lead.                                |
|                  |   |                                 | 329     | Copper, manganese, natural gas.      |
| 2,410            | 77,822  | 3,325 tons                      | 134,535 | Chromite.                            |
| 1,911            | 92,765  |                                 | 2,765   | Manganese and natural gas.           |
| 2,253            |   |                                 | 1,105   | Gems and natural gas.                |
| 1,759            | 203,900                                       |                                 | 161,095 | Natural gas and miscellaneous stone. |
| 1,890            | 220,450                                       |                                 | 548     | Other minerals.                      |
| 1,756            | 340,250                                       |                                 | 548     | Other minerals.                      |
|                  |   |                                 | 6,648   | Other minerals. <sup>2</sup>         |
| 2,118            | 138,000                                       |                                 | 225     | Gems.                                |
| 4,354            | 156,738                                       |                                 | 9,548   | Other minerals. <sup>4</sup>         |
|                  |   |                                 | 17,878  | Other minerals. <sup>5</sup>         |
| 2,997            | 147,604                                       | 273 M                           | 4,316   | Brick.                               |
|                  |   |                                 | 18,046  | Other minerals. <sup>6</sup>         |
| 371              |   | 40 lbs.                         | 5       | Copper.                              |
|                  |   | 130 lbs.                        | 8       | Lead.                                |
| 729              | 556,301                                       | 960 M                           | 16,320  | Brick.                               |
|                  |   |                                 | 17,481  | Other minerals. <sup>7</sup>         |
| 175              | 485,187                                       |                                 | 4,108   | Limestone.                           |
|                  |   |                                 | 22,382  | Other minerals. <sup>8</sup>         |

## MINERAL PRODUCTION OF

| Year        | Diamonds,<br>value | Gold,<br>value | Mineral water |          | Platinum |          |
|-------------|--------------------|----------------|---------------|----------|----------|----------|
|             |                    |                | Gallons       | Value    | Ounces   | Value    |
| 1930.....   | 25                 | \$126,858      | '             | .....    | '        | .....    |
| 1931.....   | 250                | 172,383        | '             | .....    | '        | .....    |
| 1932.....   | 50                 | 265,589        | '             | .....    | '        | .....    |
| 1933.....   | 150                | 296,159        | '             | .....    | '        | .....    |
| 1934.....   | 150                | 544,000        | '             | .....    | '        | .....    |
| Totals..... | \$3,638            | \$52,993,226   | *341,866      | \$52,202 | *1,011   | \$63,168 |

\* See under 'Unapportioned.'



## BUTTE COUNTY, 1880-1934—Continued

| Silver,<br>value | Miscellaneous<br>stone, <sup>1</sup><br>value | Miscellaneous and unapportioned |           |   |
|------------------|---|---------------------------------|-----------|---|
|                  |   | Amount                          | Value     | Substance   |
| \$422            | \$400,239                                     | 353 lbs.                        | \$46      | Copper.   |
| 650              | 300,225                                       | 2,108 lbs.                      | 12,076    | Mineral water, natural gas, platinum, soapstone.        |
| 717              | 191,487                                       | 715 lbs.                        | 192       | Copper.   |
| 971              | 98,992  | 1,133 lbs.                      | 9,037     | Brick, mineral water, natural gas, platinum, soapstone. |
| 3,172            | 80,971  | 1,805 lbs.                      | 45        | Copper.   |
|                  |   |                                 | 6,624     | Lead, mineral water, natural gas, platinum, soapstone.  |
|                  |   |                                 | 73        | Copper.   |
|                  |   |                                 | 8,316     | Lead, mineral water, natural gas, platinum, soapstone.  |
|                  |   |                                 | 144       | Copper.   |
|                  |   |                                 | 9,527     | Brick, lead, mineral water, natural gas, soapstone.     |
| \$189,442        | \$4,230,309                                   | -----                           | \$752,236 |   |

## MINERAL PRODUCTION OF

| Year      | Gold,<br>value | Silver,<br>value | Copper    |           | Mineral paint (ochre) |         | Clay  |       |
|-----------|----------------|------------------|-----------|-----------|-----------------------|---------|-------|-------|
|           |                |                  | Pounds    | Value     | Tons                  | Value   | Tons  | Value |
| 1880..... | \$320,865      | \$643            |           |           |                       |         |       |       |
| 1881..... | 800,000        | 1,200            |           |           |                       |         |       |       |
| 1882..... | 670,000        |                  |           |           |                       |         |       |       |
| 1883..... | 500,000        |                  |           |           |                       |         |       |       |
| 1884..... | 485,000        |                  |           |           |                       |         |       |       |
| 1885..... | 527,538        | 2,558            |           |           |                       |         |       |       |
| 1886..... | 639,457        | 4,926            |           |           |                       |         |       |       |
| 1887..... | 640,417        | 1,477            |           |           |                       |         |       |       |
| 1888..... | 580,000        | 1,500            |           |           |                       |         |       |       |
| 1889..... | 592,243        | 1,071            |           |           |                       |         |       |       |
| 1890..... | 618,821        | 2,499            |           |           |                       |         |       |       |
| 1891..... | 738,883        | 4,860            |           |           |                       |         |       |       |
| 1892..... | 794,531        | 24,441           |           |           |                       |         |       |       |
| 1893..... | 1,669,192      | 122              |           |           |                       |         |       |       |
| 1894..... | 2,119,365      | 5,183            | 654,866   | \$64,951  | 115                   | \$2,530 |       |       |
| 1895..... | 1,717,916      | 77               | 175,895   | 16,925    |                       |         |       |       |
| 1896..... | 1,546,398      | 500              | 87,557    | 8,990     |                       |         |       |       |
| 1897..... | 1,439,861      | 1,745            |           |           | 150                   | 2,400   |       |       |
| 1898..... | 1,019,023      | 3,462            | 18,400    | 2,052     | 100                   | 225     |       |       |
| 1899..... | 1,265,564      | 9,813            | 165,484   | 27,586    |                       |         |       |       |
| 1900..... | 1,649,126      | 80,762           | 980,934   | 150,585   | 400                   | 3,800   |       |       |
| 1901..... | 2,024,685      | 44,687           | 1,701,389 | 268,000   | 125                   | 500     |       |       |
| 1902..... | 2,072,939      | 46,234           | 2,087,501 | 251,062   | 259                   | 778     |       |       |
| 1903..... | 1,904,125      | 68,280           | 2,246,675 | 297,263   | 200                   | 1,000   |       |       |
| 1904..... | 1,789,184      | 68,611           | 2,592,124 | 414,399   | 70                    | 385     | 100   | \$100 |
| 1905..... | 1,836,816      | 78,859           | 3,666,810 | 572,022   | 379                   | 1,900   | 40    | 300   |
| 1906..... | 1,644,234      | 74,099           | 5,082,320 | 956,315   |                       |         | 50    | 250   |
| 1907..... | 1,097,974      | 54,420           | 3,941,883 | 609,203   |                       |         |       |       |
| 1908..... | 1,378,511      | 62,727           | 4,804,446 | 555,704   | 50                    | 250     | 25    | 250   |
| 1909..... | 1,440,511      | 71,418           | 5,438,908 | 690,632   |                       |         | 100   | 500   |
| 1910..... | 1,147,705      | 82,866           | 7,345,321 | 778,369   |                       |         | 30    | 250   |
| 1911..... | 1,112,315      | 67,032           | 6,190,153 | 773,769   |                       |         | 50    | 200   |
| 1912..... | 962,145        | 70,748           | 6,125,415 | 1,010,693 |                       |         | 4,281 | 4,431 |
| 1913..... | 1,175,208      | 61,076           | 5,063,187 | 784,794   | 28                    | 190     | 2,000 | 4,500 |
| 1914..... | 1,336,875      | 60,244           | 4,468,998 | 594,377   |                       |         | 280   | 280   |
| 1915..... | 1,391,134      | 53,298           | 4,031,149 | 705,451   |                       |         |       |       |
| 1916..... | 1,356,120      | 83,643           | 6,099,509 | 1,500,479 |                       |         |       |       |
| 1917..... | 1,471,442      | 87,984           | 7,720,861 | 2,107,795 |                       |         |       |       |
| 1918..... | 871,263        | 84,150           | 6,762,882 | 1,670,432 |                       |         |       |       |
| 1919..... | 1,550,574      | 35,876           | 2,049,330 | 381,175   |                       |         |       |       |
| 1920..... | 1,439,745      | 16,701           | 2,112,186 | 388,642   |                       |         |       |       |
| 1921..... | 1,495,758      | 10,232           |           |           |                       |         |       |       |

\* The Union Mine at Copperopolis was a producer as early as 1861, but there are no detailed, annual figures available for Calaveras County earlier than here shown.

\* Under 'Unapportioned.'

\* Includes crushed rock, sand, gravel.

[illegible]

## MINERAL PRODUCTION OF

| Year        | Gold,<br>value | Silver,<br>value | Copper      |              | Mineral paint (ochre) |          | Clay   |          |
|-------------|----------------|------------------|-------------|--------------|-----------------------|----------|--------|----------|
|             |                |                  | Pounds      | Value        | Tons                  | Value    | Tons   | Value    |
| 1922.....   | \$1,413,465    | \$11,648         | "           |              |                       |          | "      |          |
| 1923.....   | 1,205,784      | 7,316            | 1,598,776   | \$235,020    |                       |          | "      |          |
| 1924.....   | 853,961        | 7,463            | 4,724,441   | 618,902      |                       |          | "      |          |
| 1925.....   | 652,433        | 8,324            | 4,906,650   | 696,744      |                       |          | "      |          |
| 1926.....   | 576,889        | 6,229            | 5,240,927   | 733,730      |                       |          | "      |          |
| 1927.....   | 219,217        | 3,982            | 750,909     | 98,367       |                       |          | "      |          |
| 1928.....   | 162,372        | 1,469            | 150,911     | 21,731       |                       |          | "      |          |
| 1929.....   | 103,843        | 3,444            | 1,200,494   | 211,287      |                       |          | "      |          |
| 1930.....   | 112,913        | 1,555            | 1,857,248   | 241,442      |                       |          |        |          |
| 1931.....   | 152,771        | 989              | 184         | 17           |                       |          |        |          |
| 1932.....   | 186,378        | 763              |             |              |                       |          |        |          |
| 1933.....   | 442,980        | 1,927            | 2,248       | 144          |                       |          | "      |          |
| 1934.....   | 1,274,862      | 7,021            | 144         | 11           |                       |          | "      |          |
| Totals..... | \$58,191,331   | \$1,489,352      | 112,047,115 | \$18,439,060 | 1,876                 | \$13,958 | 46,956 | \$11,061 |

" Under 'Unapportioned.'

## CALAVERAS COUNTY, 1880-1934—Continued

| Mineral water |          | Miscellaneous stone | Quartz crystals, value | Miscellaneous and unapportioned |             |   |
|---------------|----------|---------------------|------------------------|---------------------------------|-------------|---|
| Gallons       | Value    | Value               |                        | Amount                          | Value       | Substance   |
| 1,914         | \$639    | \$35,590            | '                      | 22 fine oz.                     | \$2,150     | Platinum.   |
|               |          |                     |                        |                                 | 39,391      | Clay (pottery), copper, gems.   |
| 1,626         | 569      | 39,825              | '                      |                                 | 9,605       | Clay (pottery), quartz crystals, lead, platinum.                                    |
| 1,400         | 139      | 83,250              |                        |                                 | 8,704       | Clay (pottery), gems (quartz crystals), lead, platinum, silica (quartz), soapstone. |
| '             |          | 78,506              | '                      |                                 | 14,611      | Clay (pottery), gems (quartz crystals), lead, mineral water, platinum.              |
| '             |          | 59,000              | '                      |                                 | 433,924     | Cement, clay (pottery), gems (quartz crystals), lead, mineral water, soapstone.     |
| '             |          | '                   | '                      | 222 tons                        | 5,063       | Chromite.   |
|               |          |                     |                        | 4,606 lbs.                      | 290         | Lead.   |
|               |          |                     |                        |                                 | 1,281,795   | Cement, clay (pottery), gems (quartz crystals), soapstone, miscellaneous stone.     |
| '             |          | 557,020             | '                      | 2,817 lbs.                      | 163         | Lead.   |
|               |          |                     |                        |                                 | 2,059,787   | Cement, quartz crystals, mineral water, platinum, soapstone.                        |
| '             |          | 360,982             | '                      | 8,227 lbs.                      | 521         | Lead.   |
| '             |          | 818,507             | '                      | 1,297 lbs.                      | 1,896,182   | Cement, clay, quartz crystals, mineral water.                                       |
| '             |          | 185,810             | '                      | 4,386 lbs.                      | 65          | Lead.   |
| '             |          | 49,254              | '                      | 642 lbs.                        | 909,474     | Cement, quartz crystals, mineral water.   |
|               |          |                     |                        |                                 | 162         | Lead.   |
|               |          |                     |                        |                                 | 753,805     | Cement, quartz crystals, mineral water, platinum.                                   |
|               |          |                     |                        |                                 | 19          | Lead.   |
|               |          |                     |                        |                                 | 498,785     | Cement, pottery clay, quartz crystals, mineral water, copper.                       |
| '             |          | 46,436              |                        | 6,363 lbs.                      | 253         | Lead.   |
| '             |          | 48,339              |                        | 612 lbs.                        | 447,259     | 'Unapportioned.'  |
|               |          |                     |                        |                                 | 23          | Lead.   |
|               |          |                     |                        |                                 | 866,436     | Cement, pottery clay, mineral water.  |
| *123,310      | \$50,320 | \$2,390,569         | *\$65,500              |                                 | \$9,565,791 |   |

## MINERAL PRODUCTION OF

| Year   | Gold and silver, value | Quicksilver |           | Sandstone   |             |
|--------|------------------------|-------------|-----------|-------------|-------------|
|        |                        | Flasks      | Value     | Cubic feet  | Value       |
| 1875   |                        | 700         | \$58,905  |             |             |
| 1876   |                        | 407         | 17,908    |             |             |
| 1877   |                        | 466         | 17,382    |             |             |
| 1878   |                        |             |           |             |             |
| 1879   |                        |             |           |             |             |
| 1880   | \$4,908                |             |           |             |             |
| 1881   | 3,500                  |             |           |             |             |
| 1882   | 2,575                  |             |           |             |             |
| 1883   | 1,000                  |             |           |             |             |
| 1884   | 1,530                  |             |           |             |             |
| 1885   | 45,000                 |             |           |             |             |
| 1886   | 11,617                 |             |           |             |             |
| 1887   | 7,461                  |             |           |             |             |
| 1888   | 6,000                  |             |           |             |             |
| 1889   | 13,626                 |             |           |             |             |
| 1890   | 2,810                  |             |           |             |             |
| 1891   |                        |             |           |             |             |
| 1892   |                        |             |           |             |             |
| 1893   | 300                    |             |           |             |             |
| 1894   |                        |             |           | 20,000      | \$7,500     |
| 1895   |                        | 1           | 40        |             |             |
| 1896   |                        | 58          | 2,054     |             |             |
| 1897   |                        | 43          | 1,510     |             |             |
| 1898   |                        |             |           |             |             |
| 1899   |                        |             |           |             |             |
| 1900   |                        | 275         | 12,359    |             |             |
| 1901   | 1,800                  | 235         | 10,575    | 88,981      | 80,082      |
| 1902   | 850                    | 605         | 26,500    | 99,395      | 87,456      |
| 1903   |                        | 510         | 21,708    | 146,828     | 312,500     |
| 1904   |                        | 400         | 16,526    | 100,000     | 290,000     |
| 1905   |                        | 326         | 12,321    | 118,954     | 276,908     |
| 1906   |                        |             |           | 88,821      | 101,802     |
| 1907   | 742                    | 17          | 648       | 86,954      | 78,259      |
| 1908   | 584                    | 21          | 900       | 73,284      | 43,971      |
| 1909   |                        | 11          | 545       | 47,070      | 24,634      |
| 1910   |                        |             |           | 112,947     | 56,505      |
| 1911   | \$3,118                | 5           | 230       | 101,029     | 50,027      |
| 1912   |                        |             |           | 51,137      | 15,804      |
| 1913   |                        |             |           | 34,927      | 15,550      |
| 1914   |                        |             |           | 16,000      | 7,300       |
| 1915   |                        |             |           |             |             |
| 1916   |                        | 285         | 26,648    |             |             |
| 1917   |                        |             |           |             |             |
| 1918   |                        |             |           |             |             |
| 1919   |                        |             |           |             |             |
| 1920   |                        |             |           |             |             |
| 1921   |                        |             |           |             |             |
| 1922   |                        |             |           |             |             |
| 1923   |                        |             |           |             |             |
| 1924   |                        |             |           |             |             |
| 1925   |                        |             |           |             |             |
| 1926   |                        |             |           |             |             |
| 1927   |                        |             |           |             |             |
| 1928   |                        |             |           |             |             |
| 1929   |                        |             |           |             |             |
| 1930   |                        |             |           |             |             |
| 1931   |                        |             |           |             |             |
| 1932   | 372                    |             |           |             |             |
| 1933   | 57                     |             |           |             |             |
| 1934   | 480                    |             |           |             |             |
| Totals | \$108,330              | \$4,365     | \$226,359 | \$1,186,327 | \$1,448,298 |

<sup>1</sup> Includes crushed rock, rubble, rip-rap, sand, gravel.

<sup>2</sup> 1880 to 1890, U. S. Mint reports.

<sup>3</sup> Flasks of 76½ pounds previous to June, 1904; of 75 pounds thence, through 1927; of 76 pounds since January, 1928.

<sup>4</sup> Includes with Lassen County production.

<sup>5</sup> Includes Lassen County production.

<sup>6</sup> See under 'Unapportioned.'

[illegible]

| Year        | Brick    |             | Coal*   |           | Lime    |           |
|-------------|----------|-------------|---------|-----------|---------|-----------|
|             | M        | Value       | Tons    | Value     | Barrels | Value     |
| 1894.....   |          |             | 35,000  | \$94,000  |         |           |
| 1895.....   |          |             | 48,635  | 139,655   |         |           |
| 1896.....   | 150      | \$4,500     | 44,892  | 118,709   |         |           |
| 1897.....   |          |             | 39,267  | 105,180   |         |           |
| 1898.....   | 5,000    | 25,000      | 47,000  | 113,340   |         |           |
| 1899.....   |          |             | 53,013  | 131,613   |         |           |
| 1900.....   |          |             | 51,248  | 145,000   |         |           |
| 1901.....   |          |             | 35,000  | 100,000   |         |           |
| 1902.....   | 800      | 11,600      | 13,960  | 31,160    |         |           |
| 1903.....   | 2,600    | 16,000      |         |           | 5,300   | \$4,500   |
| 1904.....   | 9,385    | 67,495      |         |           | 12,187  | 10,359    |
| 1905.....   | 10,979   | 73,948      |         |           | 20,244  | 13,925    |
| 1906.....   | 23,267   | 169,022     |         |           |         |           |
| 1907.....   | 48,573   | 403,564     |         |           | 1,413   | 1,413     |
| 1908.....   | 55,844   | 335,737     |         |           |         |           |
| 1909.....   | 41,033   | 268,122     |         |           | 14,062  | 15,468    |
| 1910.....   | 30,284   | 199,079     |         |           | 17,338  | 14,750    |
| 1911.....   | 36,463   | 271,575     |         |           | 11,872  | 8,645     |
| 1912.....   | 32,621   | 283,718     |         |           | 14,870  | 12,640    |
| 1913.....   | 30,411   | 212,953     |         |           | 150,551 | 127,968   |
| 1914.....   | 16,064   | 129,543     | 67      | 268       | 5,666   | 4,724     |
| 1915.....   | 14,915   | 139,862     | "       |           |         |           |
| 1916.....   | 16,672   | 148,730     | "       |           |         |           |
| 1917.....   | and tile | 172,653     | "       |           |         |           |
| 1918.....   | and tile | 148,831     |         |           |         |           |
| 1919.....   |          | "           |         |           |         |           |
| 1920.....   | 13,608   | 312,398     |         |           |         |           |
| 1921.....   |          | "           |         |           |         |           |
| 1922.....   | and tile | 307,749     |         |           |         |           |
| 1923.....   |          | "           |         |           |         |           |
| 1924.....   | and tile | 327,225     |         |           |         |           |
| 1925.....   |          | "           |         |           |         |           |
| 1926.....   |          | "           |         |           |         |           |
| 1927.....   |          | 303,302     |         |           |         |           |
| 1928.....   | "        |             |         |           |         |           |
| 1929.....   | "        |             |         |           |         |           |
| 1930.....   |          |             |         |           |         |           |
| 1931.....   | "        |             |         |           |         |           |
| 1932.....   | "        |             |         |           |         |           |
| 1933.....   | and tile | 268,235     |         |           |         |           |
| 1934.....   | "        |             |         |           |         |           |
| Totals..... |          | \$4,600,841 | 368,082 | \$978,925 | 253,503 | \$214,392 |

\* Includes crushed rock, rubble, rip-rap, sand, gravel.

\* See under 'Unapportioned.'

\* Estimated.

\* The Ryne Mine on Mt. Diablo was active in 1875-1877 (inc.) and produced as high as 85 flasks per month at one stage; but total amount not available.

\* Coal mining began in the Mount Diablo section of Contra Costa County at least as early as 1861, but there are no segregated county figures available earlier than those here shown. For 1867-1882 (inc.), there are records which indicate for the Mount Diablo field a total of approximately 2,500,000 tons, valued at \$14,300,000.



## CONTRA COSTA COUNTY, 1894-1934

| Limestone |           | Mineral water |           | Miscellaneous stone <sup>1</sup> , value | Miscellaneous and unapportioned |              |  |
|-----------|-----------|---------------|-----------|--|---------------------------------|--------------|--|
| Tons      | Value     | Gallons       | Value     |  | Amount                          | Value        | Substance  |
|           |           |               |           |  |                                 |              | Quicksilver, 1875-1877 (inc.) <sup>4</sup>   |
|           |           | 7,600         | \$3,700   | \$9,000                                  | 1,400 tons                      | \$2,200      | Pottery clay.  |
|           |           | 5,000         | 1,200     |  |                                 |              |  |
|           |           | 9,300         | 3,100     |  |                                 |              |  |
|           |           | 10,000        | 3,500     |  |                                 |              |  |
|           |           | 12,000        | 1,900     |  |                                 |              |  |
|           |           | 12,000        | 1,900     |  |                                 |              |  |
|           |           | 31,200        | 8,736     |  | 31,700 lbs.                     | 3,645        | Copper.  |
| 18,000    | \$22,500  | 78,000        | 19,500    |  |                                 |              |  |
| 34,800    | 43,500    | 78,000        | 19,000    | 23,060                                   |                                 |              |  |
|           |           | "             | "         | 76,120                                   |                                 |              |  |
|           |           |               |           | 75,025                                   |                                 |              |  |
| 22,038    | 43,038    |               |           | 210,250                                  | 2,057 tons                      | 21,870       | Asphalt.   |
| 9,140     | 18,282    | 109,400       | 5,470     | 236,047                                  | 9,500 tons                      | 123,500      | Asphalt.   |
|           |           |               |           |  | 6,000 tons                      | 7,500        | Pottery clay.  |
| 22,556    | 42,837    | 199,800       | 10,590    | 233,782                                  | 17,085 tons                     | 222,105      | Asphalt.   |
| 22,912    | 37,064    | 2,500         | 375       | 235,655                                  |                                 | 683,392      | Unapportioned, 1900-1909.  |
| 68,708    | 46,208    | 206,500       | 10,325    | 257,503                                  |                                 |              |  |
| 25,879    | 45,291    | 200,000       | 10,000    | 478,162                                  |                                 |              |  |
| 26,259    | 34,976    | 192,292       | 4,989     | 660,405                                  |                                 | 921,349      | Other minerals.  |
| 32,657    | 43,661    | 364,288       | 3,643     | 308,727                                  |                                 | 658,755      | Other minerals.  |
| 11,989    | 14,565    | 350,000       | 4,000     | 397,330                                  |                                 | 757,748      | Asbestos, cement, coal.  |
|           |           | 351,724       | 6,154     | 363,753                                  |                                 | 760,423      | Cement, clay, coal, limestone.   |
|           |           | 436,265       | 8,563     | 322,507                                  |                                 | 772,934      | Cement and coal.   |
|           |           | 30,376        | 3,038     | 324,884                                  | 100 tons                        | 300          | Pottery clay.  |
|           |           | "             |           | 275,309                                  |                                 | 847,198      | Cement and copper.   |
|           |           |               |           | 432,654                                  | 1,743 tons                      | 193,340      | Clay and clay products.  |
|           |           | 600,300       | 6,099     | 415,127                                  |                                 | 926,909      | Cement and mineral water.  |
|           |           |               |           | 559,915                                  |                                 | 3,319        | Pottery clay.  |
|           |           |               |           | 629,216                                  | 7,086 tons                      | 1,333,682    | Cement and mineral water.  |
|           |           |               |           | 646,369                                  |                                 | 198,248      | Clay and clay products.  |
|           |           |               |           | 708,159                                  |                                 | 1,003,258    | Other minerals.  |
|           |           |               |           | 766,921                                  |                                 | 12,910       | Pottery clay.  |
|           |           |               |           | 816,140                                  |                                 | 1,516,738    | Cement, limestone, mineral water.  |
|           |           |               |           | 590,792                                  |                                 | 281,743      | Clay and clay products.  |
|           |           |               |           | 413,837                                  |                                 | 1,761,985    | Cement, limestone, mineral water.  |
|           |           |               |           | 398,613                                  |                                 | 1,374,496    | Clay (pottery), cement, limestone, mineral water.  |
|           |           |               |           | 351,825                                  |                                 | 1,836,020    | Clay (pottery), and clay products, cement, limestone, mineral water.                                 |
|           |           |               |           | 231,590                                  |                                 | 448,584      | Clay and clay products.  |
|           |           |               |           | 322,483                                  |                                 | 1,395,048    | Cement, limestone and mineral water.   |
|           |           |               |           | 408,412                                  |                                 | 1,053,314    | Cement, clay (pottery), limestone and mineral water.   |
|           |           |               |           |  |                                 | 1,609,690    | Brick and hollow tile, cement, clay, coal, mineral water.  |
|           |           |               |           |  |                                 | 6,327        | Pottery clay.  |
|           |           |               |           |  |                                 | 1,407,792    | Brick and hollow tile, cement, mineral water, glass sand.  |
|           |           |               |           |  |                                 | 102,036      | Gold.  |
|           |           |               |           |  |                                 | 76,687       | Silver.  |
|           |           |               |           |  |                                 | 1,065,950    | Brick and hollow tile, cement, clay, mineral water, quick-silver, glass sand.                        |
|           |           |               |           |  |                                 | 3,813        | Pottery clay.  |
|           |           |               |           |  |                                 | 973,204      | Brick and hollow tile, cement, mineral water, glass sand.  |
|           |           |               |           |  |                                 | 782,403      | Brick and hollow tile, cement, clay, mineral water, quick-silver, glass sand.                        |
|           |           |               |           |  |                                 | 641,253      | Cement, clay, mineral water, glass sand.   |
|           |           |               |           |  |                                 | 1,326,587    | Brick and hollow building tile, cement, pottery clay, mineral water, sandstone, silica (glass sand.) |
| *294,938  | \$391,922 | *3,286,545    | \$135,782 | \$12,179,572                             |                                 | \$27,118,255 |  |

## MINERAL PRODUCTION OF DEL NORTE COUNTY, 1880-1934

| Year        | Gold,<br>value | Silver,<br>value | Platinum |         | Miscel-<br>laneous<br>stone <sup>1</sup> ,<br>value | Miscellaneous and unapportioned |           |                                |
|-------------|----------------|------------------|----------|---------|---|---------------------------------|-----------|--------------------------------|
|             |                |                  | Ounces   | Value   |   | Amount                          | Value     | Substance                      |
| 1880.....   | \$215,403      | \$300            |          |         |   |                                 |           |                                |
| 1881.....   | 60,000         |                  |          |         |   |                                 |           |                                |
| 1882.....   | 80,000         |                  |          |         |   |                                 |           |                                |
| 1883.....   | 135,000        |                  |          |         |   |                                 |           |                                |
| 1884.....   | 100,000        |                  |          |         |   |                                 |           |                                |
| 1885.....   | 39,390         | 9                |          |         |   |                                 |           |                                |
| 1886.....   | 76,189         |                  |          |         |   |                                 |           |                                |
| 1887.....   |                |                  |          |         |   |                                 |           |                                |
| 1888.....   |                |                  |          |         |   |                                 |           |                                |
| 1889.....   | 21,800         |                  |          |         |   |                                 |           |                                |
| 1890.....   | 900            |                  |          |         |   |                                 |           |                                |
| 1891.....   | 5,586          |                  |          |         |   |                                 |           |                                |
| 1892.....   | 4,102          |                  |          |         |   |                                 |           |                                |
| 1893.....   | 10,352         |                  |          |         |   |                                 |           |                                |
| 1894.....   | 8,000          |                  |          |         |   |                                 |           |                                |
| 1895.....   | 8,250          |                  |          |         |   |                                 |           |                                |
| 1896.....   | 24,150         |                  |          |         |   |                                 |           |                                |
| 1897.....   | 16,710         |                  |          |         |   |                                 |           |                                |
| 1898.....   | 9,057          |                  |          |         |   |                                 |           |                                |
| 1899.....   | 4,450          |                  |          |         |   |                                 |           |                                |
| 1900.....   | 3,483          |                  |          |         |   |                                 |           |                                |
| 1901.....   | 10,612         |                  |          |         |   |                                 |           |                                |
| 1902.....   | 5,450          |                  |          |         |   |                                 |           |                                |
| 1903.....   | 7,183          |                  |          |         |   |                                 |           |                                |
| * 1904..... | 7,399          |                  | 1.5      | \$18    |   |                                 |           |                                |
| 1905.....   | 10,590         |                  | 1.5      | 22      |   |                                 |           |                                |
| 1906.....   | 5,945          | 33               |          |         |   |                                 |           |                                |
| 1907.....   | 878            | 3                |          |         |   |                                 |           |                                |
| 1908.....   | 3,488          | 19               |          |         |   | 74,787 lbs.                     | \$9,984   | Copper.                        |
| 1909.....   | 1,610          | 52               |          |         |   | 24,449 lbs.                     | 13,085    | Copper.                        |
| 1910.....   | 2,388          | 62               |          |         |   | 26,670 lbs.                     | 20,000    | Unapportioned, 1900-09.        |
| 1911.....   | 1,743          | 7                |          |         |   |                                 | 3,395     | Copper.                        |
| 1912.....   | 3,940          | 10               |          |         |   |                                 |           |                                |
| 1913.....   | 2,498          | 16               |          |         |   |                                 |           |                                |
| 1914.....   | 2,035          | 9                | 14       | 643     | \$3,250   |                                 |           |                                |
| 1915.....   | 1,018          | 6                |          |         | 3,500   |                                 |           |                                |
| 1916.....   | 405            | 2                | 2        | 73      | 1,685   |                                 |           |                                |
| 1917.....   | 1,373          | 8                | 10       | 853     | 2,700   | 3,275 tons                      | 267       | Chromite and copper.           |
| 1918.....   | 565            | 4                | 1        | 97      | 8,000   | 7,143 tons                      | 97,255    | Chromite.                      |
| 1919.....   | 867            | 6                |          |         | 6,300   |                                 | 2,151     | Other minerals.                |
| 1920.....   |                |                  |          |         | 9,000   |                                 | 2,584     | Chromite.                      |
| 1921.....   |                |                  |          |         | 5,580   |                                 | 67        | Other minerals.                |
| 1922.....   |                |                  |          |         | 5,500   |                                 | 2,781     | Chromite and copper.           |
| 1923.....   | 1,778          | 9                |          |         | 21,368  |                                 | 449       | Gold, platinum, silver.        |
| 1924.....   | 325            |                  |          |         | 721,720   |                                 | 781       | Gold, platinum, silver.        |
| 1925.....   | 681            | 1                |          |         | 269,650   |                                 | 872       | Copper and platinum.           |
| 1926.....   | 1,078          | 4                | 10       | 1,132   | 68,250  |                                 | 220       | Unapportioned.                 |
| 1927.....   | 384            | 1                |          |         | 53,350  |                                 | 250       | Other minerals.                |
| 1928.....   | 277            | 1                |          |         | 381,080   |                                 | 240       | Other minerals.                |
| 1929.....   |                | 3                |          |         | 83,380  | 5,002 lbs.                      | 880       | Copper.                        |
| 1930.....   | 279            | 1                |          |         | 175,227   |                                 | 523       | 'Unapportioned.'               |
| 1931.....   | 1,372          | 1                |          |         | 36,702  |                                 |           |                                |
| 1932.....   | 2,195          | 2                |          |         | 23,416  |                                 | 188       | 'Unapportioned.'               |
| 1933.....   | 1,933          | 3                |          |         |   |                                 | 1,126     | Platinum, miscellaneous stone. |
| 1934.....   | 6,078          | 13               |          |         | 73,883  |                                 | 24        | 'Unapportioned.'               |
| Totals      | \$909,279      | \$585            | *40      | \$2,838 | \$1,963,541   |                                 | \$514,587 |                                |

<sup>1</sup> Includes crushed rock, rubble, rip-rap, sand, gravel.<sup>2</sup> Gold, copper and chromite were produced in Del Norte County earlier than the years shown, but the amounts are not separable by counties. Some quicksilver was obtained in the 50's but there is no record of amount.<sup>3</sup> See under 'Unapportioned.'



## MINERAL PRODUCTION OF

| Year        | Gold,<br>value | Silver,<br>value | Copper   |          | Lime    |           |
|-------------|----------------|------------------|----------|----------|---------|-----------|
|             |                |                  | Pounds   | Value    | Tons    | Value     |
| 1880.....   | \$389,383      | \$208            |          |          |         |           |
| 1881.....   | 550,000        | 900              |          |          |         |           |
| 1882.....   | 600,000        |                  |          |          |         |           |
| 1883.....   | 530,000        |                  |          |          |         |           |
| 1884.....   | 575,000        | 16,000           |          |          |         |           |
| 1885.....   | 35,000         |                  |          |          |         |           |
| 1886.....   | 619,992        | 1,822            |          |          |         |           |
| 1887.....   | 706,871        | 365              |          |          |         |           |
| 1888.....   | 650,000        | 500              |          |          |         |           |
| 1889.....   | 427,638        | 408              |          |          |         |           |
| 1890.....   | 204,583        | 275              |          |          |         |           |
| 1891.....   | 173,279        | 359              |          |          |         |           |
| 1892.....   | 198,321        |                  |          |          |         |           |
| 1893.....   | 294,610        | 1,220            |          |          |         |           |
| 1894.....   | 366,707        | 356              |          |          | 1,600   | \$8,000   |
| 1895.....   | 700,101        | 448              |          |          | 4,560   | 28,500    |
| 1896.....   | 812,289        | 534              |          |          | 706     | 4,158     |
| 1897.....   | 674,626        | 886              |          |          | 2,160   | 6,750     |
| 1898.....   | 501,966        | 4,174            |          |          | 538     | 3,360     |
| 1899.....   | 404,497        | 8,414            |          |          | 1,270   | 7,935     |
| 1900.....   | 368,541        | 25,129           | 3,125    | \$500    | 1,300   | 6,000     |
| 1901.....   | 292,036        | 5,977            |          |          | 1,760   | 11,000    |
| 1902.....   | 335,031        | 52               | 2,128    | 319      | 3,936   | 16,176    |
| 1903.....   | 277,304        |                  |          |          | 896     | 7,000     |
| 1904.....   | 474,994        |                  |          |          | 2,058   | 7,075     |
| 1905.....   | 384,735        | 2,525            | 160,000  | 24,960   | 1,482   | 6,946     |
| 1906.....   | 431,746        | 2,690            |          |          | 3,075   | 21,138    |
| 1907.....   | 319,177        | 2,301            |          | 122      | 1,782   | 16,198    |
| 1908.....   | 342,033        | 5,504            | 603      | 83       | 2,547   | 20,192    |
| 1909.....   | 238,284        | 1,299            |          |          | 2,212   | 14,591    |
| 1910.....   | 171,304        | 967              |          |          | 1,808   | 9,944     |
| 1911.....   | 133,967        | 1,010            |          |          | 2,414   | 12,309    |
| 1912.....   | 105,565        | 843              |          |          | 2,244   | 11,218    |
| 1913.....   | 62,688         | 250              | 693      | 107      |         |           |
| 1914.....   | 133,886        | 654              |          |          | 2,240   | 12,082    |
| 1915.....   | 401,288        | 1,353            | 417      | 73       | 2,546   | 12,872    |
| 1916.....   | 361,821        | 1,496            | "        | "        | "       | "         |
| 1917.....   | 24,758         | 85               | 18,982   | 5,182    | "       | "         |
| 1918.....   | 28,352         | 722              | 22,259   | 5,498    | "       | "         |
| 1919.....   | 30,121         | 279              |          |          |         |           |
| 1920.....   | 13,379         | 155              |          |          |         |           |
| 1921.....   | 34,109         | 301              |          |          |         |           |
| 1922.....   | 47,340         | 376              |          |          |         |           |
| 1923.....   | 30,264         | 185              |          |          |         |           |
| 1924.....   | 28,207         | 153              |          |          |         |           |
| 1925.....   | 40,212         | 238              |          |          |         |           |
| 1926.....   | 91,789         | 472              | "        | "        | "       | "         |
| 1927.....   | 82,254         | 383              | "        | "        | "       | "         |
| 1928.....   | 122,017        | 697              | 1,074    | 155      | "       | "         |
| 1929.....   | 57,680         | 236              | "        | "        | "       | "         |
| 1930.....   | 78,019         | 250              | "        | "        | "       | "         |
| 1931.....   | 85,322         | 283              | "        | "        | "       | "         |
| 1932.....   | 182,043        | 438              | 850      | 54       | "       | "         |
| 1933.....   | 540,939        | 1,458            | 2,755    | 176      | "       | "         |
| 1934.....   | 1,380,710      | 6,035            | 4,312    | 345      | 8,250   | 85,938    |
| Totals..... | \$17,146,788   | \$101,873        | *217,198 | \$37,574 | *51,284 | \$329,382 |

\* In addition to the segregated figures herein given, a large tonnage of limestone is annually shipped from El Dorado County for use in cement manufacture, and whose value is included in the state total for cement.

\* Includes crushed rock, rubble, rip-rap, sand, gravel.

\* See under 'Unapportioned.'

\* There was a small production of quicksilver in the 60's, but no record of amounts.

[illegible]

## MINERAL PRODUCTION OF

| Year | Gold,<br>value | Silver,<br>value | Copper    |           | Petroleum  |            | Brick    |          | Miscellaneous<br>stone,<br>value |
|------|----------------|------------------|-----------|-----------|------------|------------|----------|----------|----------------------------------|
|      |                |                  | Pounds    | Value     | Barrels    | Value      | M        | Value    |                                  |
| 1880 | \$143,433      |                  |           |           |            |            |          |          |                                  |
| 1881 | 90,000         |                  |           |           |            |            |          |          |                                  |
| 1882 | 80,000         |                  |           |           |            |            |          |          |                                  |
| 1883 | 100,000        |                  |           |           |            |            |          |          |                                  |
| 1884 | 80,000         |                  |           |           |            |            |          |          |                                  |
| 1885 | 74,500         | \$2,456          |           |           |            |            |          |          |                                  |
| 1886 | 151,186        | 2,701            |           |           |            |            |          |          |                                  |
| 1887 | 205,242        | 274              |           |           |            |            |          |          |                                  |
| 1888 | 200,000        | 2,800            |           |           |            |            |          |          |                                  |
| 1889 | 185,988        | 4,629            |           |           |            |            |          |          |                                  |
| 1890 | 49,951         | 1,816            |           |           |            |            |          |          |                                  |
| 1891 | 82,607         | 10,396           |           |           |            |            |          |          |                                  |
| 1892 | 112,981        | 6                |           |           |            |            |          |          |                                  |
| 1893 | 7,118          |                  |           |           |            |            |          |          |                                  |
| 1894 | 8,202          |                  |           |           |            |            |          |          |                                  |
| 1895 | 47,249         |                  |           |           |            |            |          |          |                                  |
| 1896 | 28,235         | 100              |           |           | 14,119     | \$56,750   |          |          |                                  |
| 1897 | 43,144         |                  |           |           | 70,140     | 70,840     |          |          |                                  |
| 1898 | 27,557         |                  |           |           | 154,000    | 154,000    | 2,500    | \$18,000 |                                  |
| 1899 | 18,142         |                  |           |           | 439,372    | 439,372    | 5,500    | 38,500   |                                  |
| 1900 | 22,346         | 479              |           |           | 547,960    | 547,960    | 4,250    | 35,062   |                                  |
| 1901 | 21,462         |                  | 1,159,672 | \$182,648 | 525,433    | 236,444    | 5,000    | 35,000   |                                  |
| 1902 | 54,427         |                  | 3,000,000 | 345,000   | 571,233    | 199,931    | 6,000    | 45,000   |                                  |
| 1903 | 21,538         | 111              |           |           | 2,214,160  | 730,673    | 8,000    | 68,000   | \$11,038                         |
| 1904 | 7,809          | 4                | 2,500     | 319       | 5,114,958  | 1,520,847  | 4,800    | 32,400   |                                  |
| 1905 | 40,037         | 9,187            | 1,440,000 | 224,640   | 8,890,000  | 2,400,300  | 9,000    | 60,000   |                                  |
| 1906 | 8,493          | 83               | 440,000   | 88,000    | 8,402,000  | 1,974,470  | 8,000    | 64,000   |                                  |
| 1907 | 2,401          | 26               | 250,000   | 50,000    | 9,050,300  | 3,620,120  | 9,230    | 57,350   | 10,500                           |
| 1908 | 1,054          | 11               |           |           | 10,725,389 | 5,898,964  | 13,220   | 106,960  | 16,900                           |
| 1909 | 17,539         | 8,503            | 876,837   | 111,341   | 15,406,619 | 9,243,971  | 7,950    | 49,375   | 28,400                           |
| 1910 | 3,373          | 2,980            | 486,725   | 61,999    | 18,651,470 | 9,277,241  | 9,533    | 76,267   | 58,089                           |
| 1911 | 17,441         | 81               |           |           | 19,499,611 | 9,344,085  | 4,500    | 28,500   | 318,911                          |
| 1912 | 6,094          | 23               |           |           | 19,510,932 | 8,487,255  | 5,000    | 40,000   | 307,158                          |
| 1913 | 2,846          | 15               |           |           | 18,956,965 | 7,927,736  | 5,500    | 44,000   | 416,437                          |
| 1914 | 10,231         | 31               |           |           | 15,952,190 | 7,210,389  | 4,500    | 36,000   | 237,963                          |
| 1915 | 4,151          | 246              | 65,903    | 11,533    | 14,021,025 | 7,641,459  | 4,750    | 33,250   | 193,705                          |
| 1916 | 693            | 69               | 29,173    | 7,177     | 14,594,246 | 7,530,631  | "        |          | 95,830                           |
| 1917 | 5,745          | 289              | 40,662    | 11,101    | 16,259,797 | 13,414,333 | "        |          | 136,719                          |
| 1918 | 4,795          | 37               |           |           | 16,068,919 | 19,138,083 | and tile | 89,156   | 244,647                          |
| 1919 | 5,540          | 67               |           |           | 16,091,037 | 20,805,711 | "        |          | 241,213                          |
| 1920 | 7,793          | 227              |           |           | 15,375,454 | 22,801,798 | 12,517   | 196,756  | 535,587                          |
| 1921 | 13,085         | 75               |           |           | 12,161,565 | 18,643,679 | "        |          | 486,057                          |
| 1922 | 10,442         | 87               |           |           | 9,265,529  | 9,895,582  |          | 220,737  | 600,348                          |
| 1923 | 18,519         | 128              |           |           | 5,061,542  | 3,593,695  | "        |          | 863,087                          |
| 1924 | 32,978         | 190              |           |           | 10,156,405 | 11,801,743 |          | 95,104   | 451,540                          |
| 1925 | 25,056         | 151              |           |           | 7,773,665  | 8,503,390  | "        |          | 457,307                          |
| 1926 | 8,595          | 52               |           |           | 7,340,102  | 5,982,183  |          | 87,493   | 388,555                          |
| 1927 | 17,406         | 77               |           |           | 7,202,284  | 5,977,176  |          | 89,145   | 1,118,761                        |

[illegible]

MINERAL PRODUCTION OF

| Year       | Gold,<br>value | Silver,<br>value | Copper     |             | Petroleum   |               | Brick |             | Miscel-<br>laneous<br>stone <sup>1</sup> ,<br>value |
|------------|----------------|------------------|------------|-------------|-------------|---------------|-------|-------------|---|
|            |                |                  | Pounds     | Value       | Barrels     | Value         | M     | Value       |   |
| 1928 ..... | \$15,455       | \$75             | "          | -----       | 4,611,440   | \$3,524,985   | "     | -----       | \$362,260   |
| 1929 ..... | 13,575         | 79               | "          | -----       | 3,498,107   | 1,781,586     | "     | -----       | 301,542   |
| 1930 ..... | 5,916          | 21               | "          | -----       | 3,362,902   | 1,910,128     | "     | -----       | "   |
| 1931 ..... | 6,512          | 15               | "          | -----       | 2,991,976   | 1,649,476     | "     | -----       | 202,748   |
| 1932 ..... | 12,445         | 32               | "          | -----       | 3,665,641   | 2,038,096     | "     | -----       | 116,494   |
| 1933 ..... | 19,459         | 48               | "          | -----       | 4,516,246   | 2,586,906     | "     | -----       | 59,363  |
| 1934 ..... | 24,066         | 87               | "          | -----       | 6,607,661   | 4,295,980     | "     | -----       | "   |
| Totals.... | \$2,224,852    | \$48,827         | *7,791,472 | \$1,093,758 | 335,322,394 | \$242,857,968 | "     | \$1,645,965 | *\$8,261,159  |

<sup>1</sup> Includes crushed rock, rubble, rip-rap, sand, gravel.  
<sup>2</sup> To end of 1892, includes Madera County, which was created March 11, 1893.  
<sup>3</sup> See under "Unapportioned."  
<sup>4</sup> Brick and hollow building tile, copper, gems, mineral water, pumice, quicksilver.  
<sup>5</sup> Brick and hollow building tile, copper, diatomite, gems, mineral water, volcanic ash.  
<sup>6</sup> Brick and hollow building tile, diatomite, granite, gypsum, mineral water, volcanic ash, miscellaneous stone.  
<sup>7</sup> Brick and hollow building tile, chromite, diatomite, gems, granite, gypsum, marl, mineral water, quicksilver, volcanic ash.  
<sup>8</sup> Brick and hollow building tile, diatomite, gems, granite, gypsum, marl, mineral water, quicksilver, volcanic ash.  
<sup>9</sup> Brick and hollow building tile, pottery clay, diatomite, granite, gypsum, marl.  
<sup>10</sup> Brick and hollow building tile, clay (pottery), copper, diatomite, gems, granite, gypsum, limestone (marl), miscellaneous stone.



FRESNO COUNTY, 1880-1934—Continued

| Mineral water |          | Magnesite |           | Natural gas |              | Miscellaneous and unapportioned |             |                               |
|---------------|----------|-----------|-----------|-------------|--------------|---------------------------------|-------------|-------------------------------|
| Gallons       | Value    | Tons      | Value     | M cu. ft.   | Value        | Amount                          | Value       | Substance                     |
| '             | -----    | -----     | -----     | 1,422,366   | \$151,061    | 1,376 cu. ft.                   | \$80,050    | Granite.                      |
| '             | -----    | -----     | -----     | 1,006,110   | 190,598      | -----                           | 93,400      | Other minerals. <sup>4</sup>  |
| '             | -----    | -----     | -----     | 393,337     | 26,108       | 10 flasks                       | 28,000      | Granite.                      |
| '             | -----    | -----     | -----     | 5,591,304   | 253,937      | -----                           | 1,190       | Quicksilver.                  |
| '             | -----    | -----     | -----     | 25,476,752  | 1,520,285    | 174 flasks                      | 13,600      | Other minerals. <sup>4</sup>  |
| '             | -----    | -----     | -----     | 18,807,454  | 1,191,237    | -----                           | 13,418      | Quicksilver.                  |
| '             | -----    | -----     | -----     | 19,680,080  | 1,235,707    | 34 flasks                       | 368,882     | Other minerals. <sup>4</sup>  |
| '             | -----    | -----     | -----     |             |              | -----                           | 125,645     | Quicksilver.                  |
| '             | -----    | -----     | -----     |             |              | 30 flasks                       | 57,039      | Other minerals. <sup>7</sup>  |
| '             | -----    | -----     | -----     |             |              | -----                           | 1,541       | Other minerals. <sup>8</sup>  |
| '             | -----    | -----     | -----     |             |              | -----                           | 42,549      | Quicksilver.                  |
| '             | -----    | -----     | -----     |             |              | -----                           | 1,208       | Other minerals. <sup>9</sup>  |
| '             | -----    | -----     | -----     |             |              | -----                           | 215,759     | Quicksilver.                  |
| '             | -----    | -----     | -----     |             |              | -----                           | -----       | Other minerals. <sup>10</sup> |
| 34,288        | \$25,792 | 21,795    | \$209,165 | 108,054,070 | \$71,956,665 | -----                           | \$3,047,216 |                               |

## MINERAL PRODUCTION OF GLENN COUNTY, 1893-1934

| Year                   | Amount          | Value       | Substance            |
|------------------------|-----------------|-------------|----------------------|
| 1893 and previous..... | 3,319 long tons | \$49,700    | Chromite.            |
| 1909.....              | 140,000 tons    | 49,000      | Macadam.             |
| 1910.....              | 378,000 tons    | 34,020      | Rubble.              |
| 1911.....              | 421,775 tons    | 51,430      | Sand and gravel.     |
| 1912.....              | 543,675 tons    | 32,950      | Sand and gravel.     |
| 1913.....              | 416,640 tons    | 27,776      | Sand and gravel.     |
| 1914.....              | 746 lbs.        | 30,553      | Miscellaneous stone. |
| 1915.....              |                 | 131         | Copper.              |
|                        |                 | 46,526      | Miscellaneous stone. |
|                        |                 | 10          | Other minerals.      |
| 1916.....              |                 | 41,180      | Miscellaneous stone. |
|                        |                 | 39,982      | Other minerals.      |
|                        | 879 tons        | 21,474      | Chromite.            |
| 1917.....              | 369 tons        | 9,721       | Manganese.           |
|                        |                 | 33,260      | Miscellaneous stone. |
|                        |                 | 817         | Other minerals.      |
| 1918.....              | 1,129 tons      | 57,263      | Chromite.            |
|                        |                 | 32,436      | Miscellaneous stone. |
| 1919.....              |                 | 58,137      | Miscellaneous stone. |
|                        |                 | 1,500       | Other minerals.      |
| 1920.....              |                 | 134,707     | Miscellaneous stone. |
| 1921.....              |                 | 103,197     | Miscellaneous stone. |
| 1922.....              |                 | 91,250      | Miscellaneous stone. |
| 1923.....              |                 | 113,282     | Miscellaneous stone. |
| 1924.....              |                 | 41,550      | Miscellaneous stone. |
| 1925.....              |                 | 92,288      | Miscellaneous stone. |
| 1926.....              |                 | 58,391      | Miscellaneous stone. |
| 1927.....              |                 | 63,869      | Miscellaneous stone. |
| 1928.....              |                 | 101,889     | Miscellaneous stone. |
| 1929.....              |                 | 81,516      | Miscellaneous stone. |
| 1930.....              |                 | 61,179      | Miscellaneous stone. |
| 1931.....              |                 | 47,462      | Miscellaneous stone. |
| 1932.....              |                 | 8,714       | Miscellaneous stone. |
| 1933.....              |                 | 11,690      | Miscellaneous stone. |
| 1934.....              |                 | 30,608      | Miscellaneous stone. |
| Totals.....            |                 | \$1,659,458 |                      |



## MINERAL PRODUCTION OF

| Year        | Gold,<br>value | Silver,<br>value | Mineral water |          | Brick   |           |
|-------------|----------------|------------------|---------------|----------|---------|-----------|
|             |                |                  | Gallons       | Value    | M       | Value     |
| 1880.....   | \$153,940      | \$80             |               |          |         |           |
| 1881.....   | 75,000         | 300              |               |          |         |           |
| 1882.....   | 100,000        |                  |               |          |         |           |
| 1883.....   | 80,000         |                  |               |          |         |           |
| 1884.....   | 115,000        |                  |               |          |         |           |
| 1885.....   | 29,730         |                  |               |          |         |           |
| 1886.....   | 83,591         |                  |               |          |         |           |
| 1887.....   | 111,532        |                  |               |          |         |           |
| 1888.....   | 100,000        |                  |               |          |         |           |
| 1889.....   | 143,701        | 274              |               |          |         |           |
| 1890.....   | 93,612         | 82               |               |          |         |           |
| 1891.....   | 99,329         | 19               |               |          |         |           |
| 1892.....   | 87,515         |                  |               |          |         |           |
| 1893.....   | 66,354         |                  |               |          |         |           |
| 1894.....   | 41,326         | 14               | 20,000        | \$7,200  |         |           |
| 1895.....   | 92,635         |                  | 24,000        | 12,000   |         |           |
| 1896.....   | 65,093         |                  | 15,000        | 10,000   |         |           |
| 1897.....   | 94,992         | 57               | 10,000        | 2,000    |         |           |
| 1898.....   | 57,512         |                  |               |          | 300     | \$2,500   |
| 1899.....   | 65,059         |                  | 6,000         | 1,500    | 410     | 3,870     |
| 1900.....   | 109,444        | 136              | 6,000         | 2,000    | 795     | 7,100     |
| 1901.....   | 98,487         | 59               | 7,825         | 2,000    | 1,005   | 7,810     |
| 1902.....   | 60,015         |                  | 10,000        | 2,500    | 2,170   | 17,040    |
| 1903.....   | 38,509         |                  |               |          | 1,060   | 10,445    |
| 1904.....   | 62,061         |                  |               |          | 2,565   | 21,350    |
| 1905.....   | 45,824         |                  |               |          | 800     | 7,600     |
| 1906.....   | 48,295         | 240              |               |          | 915     | 8,690     |
| 1907.....   | 40,109         | 214              |               |          | 140     | 1,400     |
| 1908.....   | 33,066         | 325              |               |          | 760     | 8,585     |
| 1909.....   | 25,690         | 94               |               |          | 1,310   | 9,750     |
| 1910.....   | 35,289         | 150              |               |          | 476     | 4,048     |
| 1911.....   | 34,966         | 169              |               |          | 357     | 2,880     |
| 1912.....   | 31,271         | 150              |               |          | 772     | 6,415     |
| 1913.....   | 25,611         | 132              |               |          | 500     | 4,150     |
| 1914.....   | 18,686         | 57               |               |          | 607     | 6,120     |
| 1915.....   | 15,947         | 62               | 2,000         | 500      | 463     | 5,565     |
| 1916.....   | 21,279         | 55               | 3,000         | 750      | "       |           |
| 1917.....   | 23,086         | 95               | "             |          | "       |           |
| 1918.....   | 8,028          | 72               | "             |          | "       |           |
| 1919.....   | 16,260         | 134              | "             |          | "       |           |
| 1920.....   | 2,538          | 19               |               |          | "       |           |
| 1921.....   | 2,054          | 37               |               |          |         |           |
| 1922.....   | 1,330          | 10               | "             |          | "       |           |
| 1923.....   | 2,260          | 12               | "             |          | "       |           |
| 1924.....   | 1,269          | 7                | "             |          | "       |           |
| 1925.....   | 13,142         | 62               |               |          |         |           |
| 1926.....   | 1,243          | 6                |               |          |         |           |
| 1927.....   | 1,729          | 14               |               |          |         |           |
| 1928.....   | 1,788          | 7                |               |          | "       |           |
| 1929.....   | 2,372          | 101              |               |          | "       |           |
| 1930.....   | 2,255          | 9                |               |          | "       |           |
| 1931.....   | 2,678          | 5                |               |          | "       |           |
| 1932.....   | 2,549          | 4                |               |          | "       |           |
| 1933.....   | 5,902          | 11               |               |          |         |           |
| 1934.....   | 28,978         | 80               |               |          | "       |           |
| Totals..... | \$2,619,931    | \$3,354          | *103,825      | \$40,450 | *15,405 | \$135,318 |

\* Recalculated to 'commercial' from 'coining value' as originally published.

\* See under 'Unapportioned.'

\* Includes crushed rock, rubble, rip-rap, sand, gravel.



## MINERAL PRODUCTION OF IMPERIAL COUNTY, 1907-1934

| Year        | Brick    |            | Gold,<br>value | Silver,<br>value | Miscel-<br>laneous<br>stone,<br>value | Miscellaneous and unapportioned |             |   |
|-------------|----------|------------|----------------|------------------|---------------------------------------|---------------------------------|-------------|---|
|             | M        | Value      |                |                  |                                       | Amount                          | Value       | Substance   |
| 1907.....   | 1,000    | \$10,000   |                |                  |                                       |                                 |             |   |
| 1908.....   | 2,225    | 22,250     | \$5,848        | \$123            |                                       | 375 lbs.                        | \$51        | Copper.   |
| 1909.....   | 2,000    | 20,000     | 59,705         | 524              |                                       |                                 |             |   |
| 1910.....   | 1,680    | 10,078     | *87,341        | *237             |                                       |                                 |             |   |
| 1911.....   | 1,200    | 7,000      | *97,855        | *189             |                                       |                                 |             |   |
| 1912.....   | 3,250    | 20,000     |                |                  | \$10,000                              |                                 |             |   |
| 1913.....   | 5,500    | 44,000     | 31,700         | 94               | 12,000                                | 750 cu. ft.                     | 7,260       | Marble.   |
| 1914.....   | 4,900    | 29,400     | 210,428        | 8,961            |                                       | 13,081 lbs.                     | 1,730       | Copper.   |
| 1915.....   | 2,958    | 17,916     | 14,369         | 42               | 40,095                                | 65 lbs.                         | 11          | Copper.   |
| 1916.....   | "        |            | 23,338         | 155              | 34,834                                |                                 | 5,000       | Other minerals.   |
|             |          |            |                |                  |                                       |                                 | 47,006      | Brick, copper, lead, pum-<br>ice, strontium.                        |
| 1917.....   | and tile | 19,260     | 919            | 5                | 65,660                                | 1,907 tons                      | 38,140      | Manganese.  |
|             |          |            |                |                  |                                       |                                 | 5,416       | Copper, potash, pumice.   |
| 1918.....   | and tile | 11,670     | 247            | 1,248            | 34,787                                | 1,241 tons                      | 46,900      | Copper.   |
| 1919.....   | "        |            |                | 8,607            | 63,900                                |                                 | 14,840      | Manganese.  |
| 1920.....   | "        |            |                | 2,183            | 127,412                               | 624 tons                        | 67,936      | Copper, lead, pumice  |
| 1921.....   | 654      | 6,363      | 537            | 920              | 171,173                               |                                 | 16,500      | Brick, lead, pumice, salt.  |
| 1922.....   |          |            | 350            | 18,024           | 154,560                               |                                 | 23,787      | Pumice.   |
|             |          |            |                |                  |                                       |                                 | 3,825       | Other minerals.   |
| 1923.....   |          |            |                |                  | 101,833                               |                                 | 15,805      | Other minerals.   |
|             |          |            |                |                  |                                       |                                 |             | Brick, gypsum, lead,<br>marble, pumice.                             |
| 1924.....   |          |            | 258            | 1                | 78,032                                |                                 | 162,900     | Brick, gold, gypsum,<br>pumice, silver, soda<br>(salt cake).        |
| 1925.....   | "        |            | "              | "                | 148,942                               |                                 | 61,617      | Brick, gems (dumor-<br>tierite), g y p s u m,<br>pumice.            |
| 1926.....   | "        |            | 238            | 19               | 312,130                               |                                 | 182,023     | Brick, cyanite, gypsum<br>and pumice.                               |
| 1927.....   | "        |            | 257            | 3                | 129,658                               |                                 | 154,927     | Brick, cyanite, gypsum,<br>lead and pumice.                         |
| 1928.....   | "        |            | 25             | 1                | 98,790                                |                                 | 221,059     | Brick, copper, cyanite,<br>gypsum and pumice.                       |
| 1929.....   |          |            | 1,030          | 16               | 230,199                               |                                 | 142,862     | Brick, copper, cyanite,<br>feldspar, gypsum, pum-<br>ice, silica.   |
| 1930.....   |          |            | 148            |                  | 218,686                               |                                 | 278,587     | Bentonite, copper, cyan-<br>ite, feldspar, mica,<br>pumice, silica. |
| 1931.....   |          |            | 649            | 1                | 429,782                               |                                 | 149,189     | Gypsum, pumice, cyan-<br>ite.                                       |
| 1932.....   |          |            | 16,212         | 149              | 171,694                               |                                 | 97,594      | Gypsum, mica, pumice,<br>cyanite.                                   |
| 1933.....   |          |            | 6,293          | 76               | 86,962                                |                                 | 63,672      | Clay (pottery), gypsum,<br>mica, pumice, cyanite.                   |
| 1934.....   |          |            | 9,973          | 71               | 48,066                                |                                 | 73,527      | Carbon dioxide, clay,<br>gypsum, mica, cyanite.                     |
|             |          |            |                |                  |                                       |                                 | 50,370      | Carbon dioxide, cyanite,<br>copper, gypsum, pum-<br>ice, salt.      |
| Totals..... |          | *\$217,937 | *\$567,720     | *\$41,649        | \$2,769,195                           |                                 | \$1,932,544 |   |

<sup>1</sup> Imperial County was created August, 1907, from a part of San Diego County.

<sup>2</sup> Includes production of San Diego County.

<sup>3</sup> See under 'Unapportioned.'



## MINERAL PRODUCTION OF

| Year      | Gold,<br>value | Silver,<br>value | Lead       |           | Copper  |         | Zinc       |         | Borax,<br>value |
|-----------|----------------|------------------|------------|-----------|---------|---------|------------|---------|-----------------|
|           |                |                  | Pounds     | Value     | Pounds  | Value   | Pounds     | Value   |                 |
| 1880..... | \$48,648       | \$173,916        |            |           |         |         |            |         |                 |
| 1881..... | 170,000        | 140,000          |            |           |         |         |            |         |                 |
| 1882..... | 220,000        | 130,000          |            |           |         |         |            |         |                 |
| 1883..... | 90,000         | 38,000           |            |           |         |         |            |         |                 |
| 1884..... | 80,000         | 82,000           |            |           |         |         |            |         |                 |
| 1885..... | 24,998         | 73,461           |            |           |         |         |            |         |                 |
| 1886..... | 20,156         | 101,670          |            |           |         |         |            |         |                 |
| 1887..... | 10,649         | 103,370          |            |           |         |         |            |         |                 |
| 1888..... | 25,000         | 75,000           |            |           |         |         |            |         |                 |
| 1889..... | 193,957        | 30,706           |            |           |         |         |            |         |                 |
| 1890..... | 62,432         | 88,320           |            |           |         |         |            |         |                 |
| 1891..... | 35,466         | 112,730          |            |           |         |         |            |         |                 |
| 1892..... | 13,930         | 35,995           |            |           |         |         |            |         |                 |
| 1893..... | 25,945         | 52,475           |            |           |         |         |            |         |                 |
| 1894..... | 52,639         | 83,640           | 900,000    | \$27,000  |         |         |            |         | \$81,298        |
| 1895..... | 92,142         | 188,329          | 1,498,000  | 46,438    |         |         |            |         | 40,000          |
| 1896..... | 238,507        | 108,619          | 1,220,000  | 36,600    |         |         |            |         | 24,900          |
| 1897..... | 159,840        | 50,063           | 564,000    | 19,176    |         |         |            |         |                 |
| 1898..... | 137,107        | 73,503           | 580,000    | 21,170    | 49,829  | \$3,986 |            |         | 33,000          |
| 1899..... | 114,187        | 57,529           | 662,000    | 28,135    |         |         |            |         | 24,000          |
| 1900..... | 213,655        | 113,483          | 971,000    | 38,840    |         |         |            |         | 13,901          |
| 1901..... | 162,406        | 56,573           | 601,000    | 24,040    | 8,566   | 1,349   |            |         | 24,250          |
| 1902..... | 74,397         | 14,484           | 257,500    | 9,013     | 1,100   | 126     |            |         | 36,394          |
| 1903..... | 66,045         | 18,200           | 95,000     | 3,420     | 23,450  | 3,098   |            |         | 26,400          |
| 1904..... | 150,474        | 7,122            | 124,000    | 5,270     | 25,508  | 3,252   |            |         |                 |
| 1905..... | 135,959        | 29,741           | 345,680    | 16,247    | 151,606 | 23,649  |            |         |                 |
| 1906..... | 19,449         | 13,358           | 208,018    | 11,857    | 4,145   | 800     |            |         |                 |
| 1907..... | 57,241         | 44,440           | 261,140    | 13,096    | 6,779   | 1,356   | 144,213    | \$8,598 | *               |
| 1908..... | 308,873        | 30,900           | 683,401    | 28,244    | 6,820   | 938     |            |         | *               |
| 1909..... | 457,486        | 47,117           | 2,364,137  | 131,199   | 39,888  | 5,073   |            |         | *               |
| 1910..... | 408,509        | 129,590          | 2,866,227  | 127,385   | 58,801  | 7,489   |            |         | *               |
| 1911..... | 574,945        | 45,678           | 1,182,122  | 53,195    | 27,889  | 3,486   | *          |         | *               |
| 1912..... | 369,758        | 45,316           | 1,267,593  | 54,342    | 48,584  | 8,016   | *          |         | *               |
| 1913..... | 237,310        | 136,854          | 3,322,308  | 146,182   | 113,860 | 17,648  | *7,149,523 | 449,701 | *               |
| 1914..... | 275,000        | 255,000          | 4,626,934  | 180,450   | 336,423 | 44,744  | 399,641    | 20,381  | *               |
| 1915..... | 317,905        | 127,894          | 4,323,639  | 203,211   | 154,722 | 27,076  | 4,625,162  | 573,520 | *8,162,727      |
| 1916..... | 131,722        | 232,441          | 11,185,321 | 771,787   | 274,032 | 67,412  | 5,758,703  | 771,666 | 1               |
| 1917..... | 125,394        | 534,599          | 19,318,642 | 1,661,403 | 175,273 | 47,850  | 3,535,000  | 359,550 | 1               |
| 1918..... | 100,240        | 441,548          | 12,223,471 | 867,866   | 338,518 | 83,614  | 2,517,045  | 229,051 | 1               |
| 1919..... | 69,560         | 194,151          | 3,643,485  | 193,105   | 169,713 | 31,567  | 1,192,353  | 87,042  | 1               |
| 1920..... | 55,634         | 258,929          | 4,612,338  | 368,987   | 144,286 | 26,549  | 1          |         |                 |
| 1921..... | 80,373         | 86,020           | 1,052,253  | 47,351    | 45,725  | 5,898   |            |         |                 |
| 1922..... | 85,265         | 256,009          | 6,264,138  | 344,528   | 69,537  | 9,388   | 1          |         | 1               |
| 1923..... | 36,702         | 265,023          | 9,541,868  | 667,931   | 77,349  | 11,370  |            |         | 1               |

\* Combined to conceal individual annual output.

† See under 'Unapportioned.'

‡ Includes antimony, borax, gypsum, marble, molybdenum, salt, tungsten.

§ Includes asbestos, barytes, borax, gypsum, marble, molybdenum.

|| Includes borax, dolomite, marble, pumice, salt, soda, talc, tungsten.

¶ Includes borax, dolomite, fuller's earth, marble, volcanic ash, salt, talc, zinc.

\* Includes borax, building stone, marble, pumice, soda.

† Includes borax, building stone, clay (pottery), fuller's earth, limestone, marble, pumice, soda, talc, zinc.

‡ Includes building stone, borates, fuller's earth, gems, marble, pumice, tungsten concentrates.



[illegible]

## MINERAL PRODUCTION OF

| Year         | Gold,<br>value | Silver,<br>value | Lead        |             | Copper    |           | Zinc       |             | Borax,<br>value |
|--------------|----------------|------------------|-------------|-------------|-----------|-----------|------------|-------------|-----------------|
|              |                |                  | Pounds      | Value       | Pounds    | Value     | Pounds     | Value       |                 |
| 1924 .....   | \$19,997       | \$115,799        | 4,813,718   | \$385,098   | 79,995    | \$10,479  | -----      | -----       | 1               |
| 1925 .....   | 43,774         | 117,763          | 6,307,105   | 548,196     | 73,003    | 10,367    | 145,000    | \$11,020    | 1               |
| 1926 .....   | 26,871         | 77,693           | 6,541,741   | 523,339     | 42,462    | 5,945     | 76,889     | 5,767       | 1               |
| 1927 .....   | 10,109         | 47,384           | 2,173,032   | 136,901     | 30,010    | 3,931     | -----      | -----       | 1               |
| 1928 .....   | 10,781         | 23,948           | 1,733,120   | 100,421     | 22,250    | 3,204     | -----      | -----       | 1               |
| 1929 .....   | 16,889         | 23,209           | 1,335,831   | 84,157      | 17,733    | 3,121     | -----      | -----       | 1               |
| 1930 .....   | 20,466         | 42,961           | 3,452,159   | 172,608     | 19,607    | 2,549     | -----      | -----       | 1               |
| 1931 .....   | 40,603         | 41,311           | 3,703,232   | 137,020     | 8,542     | 777       | -----      | -----       | 1               |
| 1932 .....   | 42,113         | 24,105           | 2,204,108   | 66,123      | 12,672    | 798       | -----      | -----       | 1               |
| 1933 .....   | 62,312         | 7,332            | 601,135     | 22,241      | 7,940     | 508       | 255,944    | 10,741      | 1               |
| 1934 .....   | 266,109        | 25,943           | 530,037     | 19,611      | 33,363    | 2,669     | 721,719    | 31,034      | 1               |
| Totals ..... | \$6,890,269    | \$5,731,254      | 130,100,433 | \$8,344,093 | 2,599,980 | \$480,082 | 26,511,192 | \$2,558,071 | \$8,466,870     |

<sup>1</sup> See under 'Unapportioned.'

<sup>2</sup> Includes alum, borates, building stone (tuff), fuller's earth, glauber salt, lime, limestone, magnesium, sulphate, pumice, radio galena crystals, soda (ash and bicarbonate), tungsten concentrates.

<sup>10</sup> Includes borates, building stone (tuff), fuller's earth, graphite, limestone, pumice, soda (ash and bicarbonate), tungsten concentrates.

<sup>11</sup> Includes borates, building stone (tuff), dolomite, gems, limestone, salt, tungsten concentrates.

<sup>12</sup> Includes borates, building stone (tuff), dolomite, fuller's earth, lime.

<sup>13</sup> Includes borates, dolomite, fuller's earth, gems, granite (tuff), salt, tungsten.

<sup>14</sup> Includes borates, dolomite, fuller's earth, gems, granite (tuff), limestone, marble, pumice, salt, tungsten.

<sup>15</sup> Includes barytes, bentonite, borates, dolomite, gems, granite (tuff), lime, marble, mineral water, pumice, salt, silica, talc, tungsten.

<sup>16</sup> Includes barytes, bentonite, borates, dolomite, lime, limestone, pumice, quicksilver, talc, miscellaneous stone.

<sup>17</sup> Includes bentonite, borates, dolomite, feldspar, quicksilver, silica, slate, talc, soda, sulphur.

<sup>18</sup> Includes bentonite, borates, pottery clay, molybdenite, silica, slate, talc, soda, sulphur, tungsten.

<sup>19</sup> Includes bentonite, borates, dolomite, gems, slate, soda, sulphur, talc.

INYO COUNTY, 1880-1934—Continued

| Soda    |              | Soapstone and talc |           | Miscellaneous<br>stone,<br>value | Miscellaneous and unapportioned |              |                               |
|---------|--------------|--------------------|-----------|----------------------------------|---------------------------------|--------------|-------------------------------|
| Tons    | Value        | Tons               | Value     |                                  | Amount                          | Value        | Substance                     |
| 1       | -----        | 5,942              | \$98,806  | \$12,500                         | 17,197 tons                     | \$37,491     | Dolomite.                     |
| 1       | -----        | 5,335              | 89,134    | -----                            | -----                           | 1,429,925    | Other minerals. <sup>9</sup>  |
| 60,473  | \$1,232,081  | 6,487              | 98,563    | \$12,000                         | 2,275 tons                      | 1,764,891    | Other minerals. <sup>10</sup> |
| -----   | -----        | -----              | -----     | -----                            | 20,130                          | -----        | Fuller's earth.               |
| 53,328  | 1,293,379    | 7,009              | 99,416    | 6,000                            | 300 tons                        | 1,750        | Pumice.                       |
| 86,664  | 1,292,165    | 8,563              | 121,177   | 44,831                           | -----                           | 831,695      | Other minerals. <sup>11</sup> |
| 70,440  | 1,525,060    | 8,274              | 120,875   | 224,625                          | 344 tons                        | 2,496        | Pumice.                       |
| 67,119  | 1,273,098    | 1                  | -----     | 310,675                          | -----                           | 920,218      | Other minerals. <sup>12</sup> |
| 56,251  | 903,511      | 1                  | -----     | 1                                | 163 tons                        | 1,630        | Pumice and volcanic ash.      |
| 1       | -----        | 1                  | -----     | 5,800                            | -----                           | 234,410      | Other minerals. <sup>13</sup> |
| 1       | -----        | 1                  | -----     | 18,690                           | 431 tons                        | 298,275      | Other minerals. <sup>14</sup> |
| 1       | -----        | 1                  | -----     | 66,081                           | -----                           | 438,409      | Other minerals. <sup>15</sup> |
| 1       | -----        | 1                  | -----     | -----                            | 48,487 tons                     | 224,486      | Other minerals. <sup>16</sup> |
| 1       | -----        | 1                  | -----     | -----                            | 894 tons                        | 4,845        | Pumice and volcanic ash.      |
| 1       | -----        | 1                  | -----     | -----                            | 673 tons                        | 580,237      | Other minerals. <sup>17</sup> |
| 629,107 | \$11,883,779 | 70,950             | \$954,106 | \$772,782                        | -----                           | 164,987      | Dolomite.                     |
| -----   | -----        | -----              | -----     | -----                            | -----                           | 724,346      | Pumice and volcanic ash.      |
| -----   | -----        | -----              | -----     | -----                            | -----                           | 5,115        | Other minerals. <sup>18</sup> |
| -----   | -----        | -----              | -----     | -----                            | -----                           | 877,163      | Pumice and volcanic ash.      |
| -----   | -----        | -----              | -----     | -----                            | -----                           | -----        | Other minerals. <sup>19</sup> |
| -----   | -----        | -----              | -----     | -----                            | -----                           | \$25,652,104 | -----                         |

## MINERAL PRODUCTION OF KINGS COUNTY, 1894-1934

| Year      | Brick      |           | Gypsum       |         | Natural gas |              | Quicksilver |          | Miscellaneous and unapportioned                       |                                       |  |
|-----------|------------|-----------|--------------|---------|-------------|--------------|-------------|----------|---|---------------------------------------|--|
|           | M          | Value     | Tons         | Value   | M cu. ft.   | Value        | Flasks      | Value    | Amount  | Value                                 | Substance  |
| 1894      |            |           |              |         |             |              |             |          |   |                                       |  |
| 1895      |            |           |              |         |             |              |             |          |   |                                       |  |
| 1896      |            |           |              |         |             |              |             |          |   |                                       |  |
| 1897      |            |           |              |         |             |              |             |          |   |                                       |  |
| 1898      | 1,250      | \$8,450   |              |         |             |              |             |          |   |                                       |  |
| 1899      | 1,650      | 11,550    |              |         |             |              |             |          |   |                                       |  |
| 1900      | 750        | 5,000     |              |         |             |              |             |          |   |                                       |  |
| 1901      | 1,000      | 5,000     |              |         |             |              |             |          |   | \$10,500                              | Unapportioned 1900-1909.   |
| 1902      | 3,500      | 19,000    |              |         |             |              |             |          |   |                                       |  |
| 1903      | 3,400      | 24,200    |              |         |             |              |             |          |   |                                       |  |
| 1904      | 3,100      | 23,300    |              |         |             |              |             |          |   |                                       |  |
| 1905      | 3,400      | 24,000    |              |         |             |              |             |          |   |                                       |  |
| 1906      | 1,000      | 8,000     |              |         |             |              |             |          |   |                                       |  |
| 1907      | 1,000      | 8,000     |              |         |             |              |             |          |   |                                       |  |
| 1908      | 3,000      | 24,000    | 100          | \$400   |             |              |             |          |   |                                       |  |
| 1909      | 1,000      | 8,500     | 100          | 300     | 360         | \$360        |             |          |   |                                       |  |
| 1910      | 400        | 3,200     | 100          | 490     | 1,200       | 600          | 100         | 4,525    | 100 tons<br>50 tons<br>100 tons<br>20 tons<br>10 tons | 1,000<br>1,000<br>2,000<br>100<br>270 | Fuller's earth.<br>Fuller's earth.<br>Fuller's earth.<br>Mineral paint.<br>Fuller's earth.<br>Mineral paint. |
| 1911      |            |           | 20           | 100     | 1,800       | 800          |             |          |   |                                       |  |
| 1912      |            |           | 50           | 200     | 6,000       | 1,650        |             |          |   |                                       |  |
| 1913      |            |           | 100          | 300     | 1,916       | 575          |             |          | 20 tons   | 60                                    | Mineral paint.   |
| 1914      |            |           | 20           | 80      | 150         | 500          |             |          |   | 400                                   | Other minerals.  |
| 1915      |            |           |              |         | 258         | 608          |             |          | 20 tons   | 160                                   | Fuller's earth.  |
|           |            |           |              |         |             |              |             |          |   | 18,000                                | quicksilver.   |
| Totals    | 26,250     | \$184,200 | 490          | \$1,870 |             |              |             |          |   |                                       |  |
| Petroleum |            |           |              |         |             |              |             |          |   |                                       |  |
|           | Barrels    |           | Value        |         |             |              |             |          |   |                                       |  |
| 1916      |            |           |              |         | 258         | 608          |             |          |   | 26,180                                | Other minerals.  |
| 1917      |            |           |              |         | 3,569       | 2,777        |             |          |   |                                       |  |
| 1918      |            |           |              |         | 2,460       | 590          |             |          |   | 8,639                                 | Other minerals.  |
| 1919      |            |           |              |         | 2,550       | 1,630        |             |          |   | 49,653                                | Other minerals.  |
| 1920      |            |           |              |         | 2,765       | 1,250        | 436         | 28,620   |   |                                       |  |
| 1921      |            |           |              |         | 2,090       | 980          |             |          |   | 4,742                                 | Other minerals.  |
| 1922      |            |           |              |         | 1,790       | 870          |             |          |   | 5,936                                 | Other minerals.  |
| 1923      |            |           |              |         | 1,990       | 970          |             |          |   | 585                                   | Other minerals.  |
| 1924      |            |           |              |         | 1,480       | 725          |             |          |   |                                       |  |
| 1925      |            |           |              |         | 740         | 440          |             |          |   | 80                                    | Other minerals.  |
| 1926      |            |           |              |         | 470         | 245          |             |          |   | 475                                   | Other minerals.  |
| 1927      |            |           |              |         |             |              |             |          |   | 1,599                                 | Natural gas and petroleum.   |
| 1928      | 198,784    |           | \$576,474    |         |             |              |             |          |   | 1,240                                 | Miscellaneous stone.   |
| 1929      | 1,968,729  |           | 3,294,688    |         | 25,809,765  | 981,343      |             |          |   | 105                                   | Unapportioned  |
| 1930      | 6,176,130  |           | 9,437,771    |         | 47,959,591  | 3,668,722    |             |          |   | 350                                   | Unapportioned.   |
| 1931      | 17,607,527 |           | 12,735,524   |         | 120,253,916 | 4,636,107    |             |          |   | 270                                   | Unapportioned.   |
| 1932      | 21,981,835 |           | 18,398,796   |         | 92,279,724  | 4,322,190    |             |          |   |                                       |  |
| 1933      | 21,663,622 |           | 20,253,320   |         | 104,893,813 | 5,216,344    |             |          |   | 4,588                                 | Unapportioned.   |
|           |            |           |              |         |             |              |             |          |   | 694                                   | Gold.  |
|           |            |           |              |         |             |              |             |          |   | 3                                     | Silver.  |
| 1934      | 21,393,483 |           | 23,104,962   |         | 96,939,145  | 4,957,070    |             |          |   | 2,560                                 | Miscellaneous stone.   |
|           |            |           |              |         |             |              |             |          |   | 2,100                                 | Unapportioned.   |
| Totals    | 90,990,110 |           | \$87,801,535 |         | 488,167,800 | \$23,797,954 | 786         | \$42,145 |   | \$144,388                             |  |

\*Flasks of 75 pounds, June, 1904-December, 1927 (inc.); of 76 pounds, since.

<sup>1</sup> Kings County was created March 22, 1893, from a part of Tulare County, and in 1909 extended by annexing a portion of Fresno County.<sup>2</sup> See under 'Unapportioned.'

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1 Kings C  
Fresno Count  
2 See und



MINERAL PRODUCTION OF KERN COUNTY—1880-1934

| Year   | Asphaltum |             | Brick            |             | Copper           |           | Fuller's earth |                  | Gold,<br>value | Lime             |                  | Limestone        |          | Silver,<br>value | Natural gas |              | Petroleum     |                 | Miscellaneous and unapportioned |         |  |
|--------|-----------|-------------|------------------|-------------|------------------|-----------|----------------|------------------|----------------|------------------|------------------|------------------|----------|------------------|-------------|--------------|---------------|-----------------|---------------------------------|---------|--|
|        | Tons      | Value       | M                | Value       | Pounds           | Value     | Tons           | Value            |                | Barrels          | Value            | Tons             | Value    |                  | M cu. ft.   | Value        | Barrels       | Value           | Amount                          | Value   | Substance  |
| 1880   |           |             |                  |             |                  |           |                |                  | \$94,214       |                  |                  |                  |          | \$390            |             |              |               |                 |                                 |         |  |
| 1881   |           |             |                  |             |                  |           |                |                  | 190,000        |                  |                  |                  |          | 14,000           |             |              |               |                 |                                 |         |  |
| 1882   |           |             |                  |             |                  |           |                |                  | 260,000        |                  |                  |                  |          | 20,000           |             |              |               |                 |                                 |         |  |
| 1883   |           |             |                  |             |                  |           |                |                  | 150,000        |                  |                  |                  |          | 5,000            |             |              |               |                 |                                 |         |  |
| 1884   |           |             |                  |             |                  |           |                |                  | 100,000        |                  |                  |                  |          | 5,000            |             |              |               |                 |                                 |         |  |
| 1885   |           |             |                  |             |                  |           |                |                  | 72,003         |                  |                  |                  |          |                  |             |              |               |                 |                                 |         |  |
| 1886   |           |             |                  |             |                  |           |                |                  | 94,640         |                  |                  |                  |          | 1,721            |             |              |               |                 |                                 |         |  |
| 1887   |           |             |                  |             |                  |           |                |                  | 72,358         |                  |                  |                  |          | 150              |             |              |               |                 |                                 |         |  |
| 1888   |           |             |                  |             |                  |           |                |                  | 60,000         |                  |                  |                  |          | 2,500            |             |              |               |                 |                                 |         |  |
| 1889   |           |             |                  |             |                  |           |                |                  | 242,676        |                  |                  |                  |          | 7,517            |             |              |               |                 |                                 |         |  |
| 1890   |           |             |                  |             |                  |           |                |                  | 117,341        |                  |                  |                  |          | 586              |             |              |               |                 |                                 |         |  |
| 1891   |           |             |                  |             |                  |           |                |                  | 107,735        |                  |                  |                  |          | 61               |             |              |               |                 |                                 |         |  |
| 1892   |           |             |                  |             |                  |           |                |                  | 107,738        |                  |                  |                  |          | 73               |             |              |               |                 |                                 |         |  |
| 1893   |           |             |                  |             |                  |           |                |                  | 83,665         |                  |                  |                  |          | 1,754            |             |              |               |                 |                                 |         |  |
| 1894   | 6,900     | \$135,000   |                  |             |                  |           |                |                  | 310,707        | 33,000           | \$26,500         |                  |          | 39,700           |             |              | 11,215        | \$69,334        | 92 tons                         | \$3,720 | Antimony.  |
| 1895   | 1,400     | 28,000      |                  |             |                  |           |                |                  | 231,433        | 25,400           | 24,980           |                  |          | 46,064           |             |              | 116           | 116             | 33 tons                         | 1,485   | Antimony.  |
| 1896   | 2,484     | 44,680      |                  |             |                  |           |                |                  | 590,867        | 37,100           | 32,329           |                  |          | 34,650           |             |              | 235           | 235             | 15 tons                         | 2,250   | Antimony.  |
| 1897   | 4,650     | 86,350      | 1,100            | \$6,600     |                  |           |                |                  | 754,313        | 53,400           | 70,370           | 5,000            | 5,000    | 10,471           |             |              |               |                 | 25 tons                         | 3,500   | Antimony.  |
| 1898   | 1,850     | 50,000      | 2,000            | 14,000      |                  |           |                |                  | 1,017,930      | 42,000           | 29,900           |                  |          | 6,543            |             |              | 10,000        | 10,000          | 220 tons                        | 1,100   | Coal.  |
| 1899   | 2,537     | 57,670      | 1,600            | 11,400      |                  |           | 620            | \$12,400         | 863,414        | 64,700           | 57,690           |                  |          | 6,810            |             |              | 15,000        | 13,500          | 40 tons                         | 1,200   | Antimony.  |
| 1900   | 701       | 14,020      | 2,525            | 17,300      | 4,000            | \$750     | 500            | 3,750            | 805,252        | 57,721           | 51,700           |                  |          | 147,736          |             |              | 919,275       | 827,348         | 27 tons                         | 3,382   | Borax.   |
| 1901   | 3,112     | 43,126      | 4,600            | 23,400      | 429,248          | 67,606    | 1,000          | 19,500           | 1,007,059      | 62,000           | 82,700           |                  |          | 40,497           |             |              | 3,902,125     | 1,131,616       | 1,600 lbs.                      | 859,927 | Unapportioned, 1900-1909.  |
| 1902   | 10,150    | 101,500     | 3,500            | 24,500      | 235,840          | 27,122    | 987            | 19,246           | 1,165,982      | 99,360           | 80,856           |                  |          | 99,135           |             |              | 9,777,948     | 1,955,585       | 50 tons                         | 64      | Lead.  |
| 1903   | 8,006     | 100,787     | 9,000            | 30,000      | 4,300            | 559       | 250            | 4,750            | 1,022,353      | 101,661          | 76,246           |                  |          | 114,614          |             |              | 18,001,148    | 3,600,230       | 1,000 tons                      | 8,000   | Antimony.  |
| 1904   | 12,451    | 124,110     | 700              | 4,900       |                  |           | 500            | 9,500            | 1,426,523      | 178,038          | 172,000          |                  |          | 151,189          |             |              | 19,608,045    | 3,431,408       | 28 tons                         | 63      | Gypsum.  |
| 1905   | 10,586    | 105,860     | 750              | 6,000       |                  |           |                |                  | 1,160,971      | 279,650          | 255,500          | 44,000           |          | 134,944          |             |              | 17,069,715    | 3,174,966       | 1,000 tons                      | 8,000   | Gypsum.  |
| 1906   | 23,136    | 231,360     | 4,275            | 34,200      |                  |           |                |                  | 806,117        | 295,613          | 267,096          |                  |          | 129,503          |             |              | 13,826,000    | 3,765,200       | 53 tons                         | 54      | Clay.  |
| 1907   | 20,443    | 260,158     | 2,168            | 18,428      |                  |           |                |                  | 878,798        | 175,000          | 169,822          |                  |          | 88,033           |             |              | 15,700,308    | 4,673,867       | 1,350 tons                      | 11,000  | Gypsum.  |
| 1908   | 50,000    | 475,000     | 2,080            | 19,552      |                  |           |                |                  | 827,087        | 116,717          | 87,788           |                  |          | 96,550           |             |              | 18,777,871    | 9,388,935       | 52 tons                         | 18,800  | Tungsten.  |
| 1909   | 54,599    | 655,391     | 3,365            | 29,634      |                  |           | 359            | 5,385            | 654,799        | 115,709          | 88,869           |                  |          | 101,633          | 38,000      | \$2,714      | 24,549,758    | 12,565,246      | 215 tons                        | 752     | Clay.  |
| 1910   | 76,605    | 811,846     | 8,332            | 63,711      |                  |           |                |                  | 619,974        | 99,187           | 86,198           | 4,331            |          | 35,041           | 975,724     | 47,364       | 40,641,159    | 17,825,212      | 1,000 tons                      | 183,600 | Tungsten.  |
| 1911   |           |             | 5,603            | 41,426      | 29,441           | 3,680     |                |                  | 557,471        | 96,500           | 82,025           | 600              | 400      | 5,833            | 1,654,380   | 165,438      | 46,562,825    | 20,207,906      | 1,000 tons                      | 5,500   | Gypsum.  |
| 1912   |           |             | 1,890            | 23,120      |                  |           |                |                  | 830,421        | 162,831          | 124,894          |                  |          | 11,480           | 4,400,000   | 325,484      | 51,448,067    | 21,762,532      | 242 tons                        | 121     | Rubble.  |
| 1913   |           |             | 1,625            | 22,000      | 3,498            |           | Total          | \$4,216 \$74,531 | 649,712        | 135,000          | 91,200           |                  |          | 11,851           | 7,111,237   | 568,899      | 58,698,432    | 27,038,474      | 230,950 tons                    | 107,880 | Crushed rock.  |
| 1914   |           |             | 3,834            | 29,214      | 7,394            | 983       |                |                  | 594,337        | 81,600           | 65,100           |                  |          | 8,002            | 6,508,868   | 390,532      | 65,332,633    | 26,721,046      | 853 tons                        | 4,245   | Gypsum.  |
| 1915   |           |             |                  |             | 1,047            | 183       |                | \$59,319         | 983,319        | 55,176           | 39,523           | 1,425            | 1,710    | 13,316           | 12,163,461  | 737,638      | 54,810,669    | 23,184,913      | 2,417 lbs.                      | 109     | Lead.  |
| 1916   |           |             | 3,177            | 23,824      | 24,754           | 6,089     |                | 63,723           | 747,042        | ( <sup>1</sup> ) |                  |                  |          | 8,745            | 16,679,658  | 1,379,033    | 54,120,509    | 34,691,246      | 8,479 tons                      | 18,188  | Gypsum.  |
| 1917   |           |             | and tile         | 22,785      | 251,225          | 68,584    |                | 31,787           | 537,852        | ( <sup>1</sup> ) | ( <sup>1</sup> ) |                  |          | 7,813            | 25,819,376  | 1,445,880    | 53,065,066    | 47,387,104      | 19,664 lbs.                     | 885     | Lead.  |
| 1918   |           |             | 1,678            | 16,380      | 95,580           | 23,608    |                | 311              | 246,127        | 23,615           | 23,615           | ( <sup>1</sup> ) |          | 7,817            | 23,545,128  | 1,507,912    | 49,049,917    | 61,410,496      | 208 tons                        | 104     | Clay.  |
| 1919   |           |             | 1,709            | 175,112     |                  |           |                | 28,320           | 150,589        | 86,952           | 112,724          | ( <sup>1</sup> ) |          | 8,402            | 25,363,739  | 1,618,913    | 47,734,035    | 64,440,947      | 10,000 tons                     | 22,750  | Gypsum.  |
| 1920   |           |             | 3,850            | 56,550      | 206              | 38        |                | 31,180           | 61,187         | 76,395           | 106,733          |                  |          | 8,385            | 34,912,865  | 1,810,147    | 50,660,438    | 88,831,991      | 1,376 lbs.                      | 61      | Lead.  |
| 1921   |           |             | 5,840            | 85,820      |                  |           |                | 38,208           | 84,698         | 72,629           | 141,491          |                  |          | 1,897            | 40,136,930  | 1,926,797    | 57,434,945    | 97,639,407      | 346 tons                        | 172     | Clay.  |
| 1922   |           |             | 5,082            | 66,652      |                  |           |                | 35,585           | 124,337        |                  |                  |                  |          | 6,524            | 47,044,633  | 2,282,100    | 53,512,157    | 64,803,222      | 82 tons                         | 320     | Lead.  |
| 1923   |           |             | 5,271            | 68,375      |                  |           |                | 9,225            | 107,051        | 17,985           | 214,183          | ( <sup>1</sup> ) |          | 33,151           | 42,421,592  | 2,051,656    | 45,952,704    | 37,629,300      | 379 lbs.                        | 15      | Lead.  |
| 1924   |           |             | ( <sup>1</sup> ) | 23,058      |                  |           |                | 5,244            | 154,132        | 8,130            | 96,880           |                  |          | 35,902           | 47,881,308  | 2,522,551    | 61,175,405    | 69,572,934      | 20,000 tons                     | 833     | Fuller's earth, limestone, quicksilver.                                  |
| 1925   |           |             | ( <sup>1</sup> ) |             |                  |           |                | 3,000            | 135,545        |                  |                  |                  |          | 7,455            | 45,049,845  | 2,290,608    | 58,852,742    | 84,255,094      | 9,684 lbs.                      | 600     | Other minerals.  |
| 1926   |           |             | 4,591            | 55,140      |                  |           |                | 28,000           | 135,508        | ( <sup>1</sup> ) |                  |                  |          | 4,667            | 44,182,140  | 2,158,867    | 54,549,646    | 78,987,887      | 346 tons                        | 172     | Clay.  |
| 1927   |           |             | 4,835            | 50,438      |                  |           |                | 79,510           | 171,100        | ( <sup>1</sup> ) |                  |                  |          | 8,932            | 39,401,478  | 2,057,807    | 51,570,412    | 58,738,699      | 82 tons                         | 320     | Lead.  |
| 1928   |           |             | 2,126            | 30,791      |                  |           |                | 78,663           | 186,453        | ( <sup>1</sup> ) |                  |                  |          | 5,245            | 35,107,062  | 1,916,797    | 44,096,638    | 36,803,054      | 20,000 tons                     | 50,000  | Other minerals.  |
| 1929   |           |             | 3,503            | 44,681      |                  |           |                | 361,896          | 148,421        |                  |                  |                  |          | 2,312            | 34,409,095  | 1,861,950    | 43,577,420    | 32,299,584      | 180,575                         | 11,301  | Antimony ore.  |
| 1930   |           |             | ( <sup>1</sup> ) |             | ( <sup>1</sup> ) |           |                | 450,351          | 165,435        |                  |                  |                  |          | 1,757            | 27,908,423  | 1,290,090    | 44,170,810    | 37,015,139      | 267 tons                        | 3,965   | Cement, pottery clay, fuller's earth, gypsum, magnesite, salt, tungsten. |
| 1931   |           |             | ( <sup>1</sup> ) |             | 207              | 19        |                | 108,958          | 202,108        |                  |                  |                  |          | 2,534            | 26,977,942  | 1,444,732    | 35,794,138    | 22,765,072      | 84,371 lbs.                     | 299,997 | Lead.  |
| 1932   |           |             | ( <sup>1</sup> ) |             | ( <sup>1</sup> ) |           |                | 49,077           | 296,250        | ( <sup>1</sup> ) | ( <sup>1</sup> ) |                  |          | 3,957            | 26,234,262  | 1,201,293    | 35,552,561    | 23,393,585      | 145 tons                        | 5,880   | Antimony ore.  |
| 1933   |           |             | ( <sup>1</sup> ) |             | 760              | 49        |                | 70,931           | 424,376        |                  |                  |                  |          | 70,931           | 20,571,398  | 916,090      | 35,349,272    | 23,521,406      | 24,274 lbs.                     | 1,675   | Lime and limestone.  |
| 1934   |           |             | ( <sup>1</sup> ) |             | 5,502            | 440       |                | 131,743          | 1,021,849      |                  |                  |                  |          | 73,468           | 21,309,723  | 1,017,661    | 41,823,494    | 30,475,225      | 4,100 tons                      | 23,700  | Silica.  |
| Totals | 286,610   | \$3,327,858 | 1100,555         | \$1,015,933 | 1,093,002        | \$200,252 |                | \$1,659,031      | \$24,611,269   | 2,653,042        | \$2,758,912      | 7,025            | \$65,441 | \$1,690,241      | 659,008,267 | \$34,938,953 | 1,377,704,943 | \$1,174,009,061 | 193 tons                        | 482,357 | Tungsten concentrates.   |

<sup>1</sup> See under "Unapportioned."  
<sup>2</sup> Includes crushed rock, rubble, rip-rap, sand, gravel.



MINERAL PRODUCTION OF LAKE COUNTY, 1873-1934—Continued

| Year      | Quicksilver |              | Mineral water |             | Chromite |          | Miscellaneous stone <sup>1</sup> , value | Miscellaneous and unapportioned |          |                 |
|-----------|-------------|--------------|---------------|-------------|----------|----------|--|---------------------------------|----------|-----------------|
|           | Flasks      | Value        | Gallons       | Value       | Tons     | Value    |  | Amount                          | Value    | Substance       |
| 1930..... | 1,760       | \$195,710    | 36,758        | \$14,524    | -----    | -----    | \$58,059                                 | -----                           | \$71     | Other minerals. |
| 1931..... | 3,046       | 251,879      | 24,916        | 14,034      | -----    | -----    | 14,785                                   | -----                           | 70       | Other minerals. |
| 1932..... | 1,038       | 57,850       | 18,870        | 6,050       | -----    | -----    | 33,164                                   | -----                           | 20       | Other minerals. |
| 1933..... | 1,610       | 90,592       | 11,799        | 11,177      | -----    | -----    | 32,052                                   | -----                           | 30       | Other minerals. |
| 1934..... | 3,497       | 221,837      | 11,372        | 11,005      | -----    | -----    | 27,426                                   | -----                           | 213      | Other minerals. |
| Totals..  | 267,322     | \$11,100,830 | 7,724,212     | \$2,707,217 | 2,897    | \$77,746 | \$637,236                                | -----                           | \$78,581 |                 |

\* Bartlett Springs since 1888 and Witter Springs since 1899 reported to U. S. Geological Survey, but no segregated figures available for Lake County previous to 1895.

<sup>1</sup> Includes crushed rock, rubble, rip-rap, sand, gravel.

<sup>2</sup> Flasks of 76½ pounds previous to June, 1904; of 75 pounds thence, through 1927; of 76 pounds since January, 1928.

<sup>3</sup> See under 'Unapportioned.'

In addition to the above, Lake County has produced the following:

| Borax  | Sulphur     | Pounds    | Value    |
|--|-------------|-----------|----------|
| 1864 to 1868 Borax Lake yielded 590 tons refined borax, worth \$414,636; 1872 from Lake Hachinhama, 140 tons, worth \$89,600; total 730 tons, worth \$504,236. | 1865.....   | 214,650   | \$8,030  |
|  | 1866.....   | 675,963   | 21,970   |
|  | 1867.....   | 487,603   | 13,430   |
|  | 1868.....   | 503,481   | 10,030   |
|  | Totals..... | 1,881,697 | \$53,300 |



MINERAL PRODUCTION OF LOS ANGELES COUNTY, 1880-1934

| Year   | Gold,<br>value | Silver,<br>value | Petroleum     |                 | Asphalt<br>(tons) | Natural gas<br>(M cu. ft.) | Gypsum |           | Salt    |           | Gem,<br>value | Mineral water |             | Brick    |              | Pottery clay |             | Sandstone and<br>serpentine |           | Miscel-<br>laneous<br>stone, <sup>1</sup><br>value | Miscellaneous and unapportioned. |       |           |
|--------|----------------|------------------|---------------|-----------------|-------------------|----------------------------|--------|-----------|---------|-----------|---------------|---------------|-------------|----------|--------------|--------------|-------------|-----------------------------|-----------|--|----------------------------------|-------|-----------|
|        |                |                  | Barrels       | Value           |                   |                            | Tons   | Value     | Tons    | Value     |               | Gallons       | Value       | M        | Value        | Tons         | Value       | Cubic feet                  | Value     |  | Amount                           | Value | Substance |
| 1880   | \$7,700        | \$66,300         | *             |                 |                   |                            |        |           |         |           |               |               |             |          |              |              |             |                             |           |  |                                  |       |           |
| 1881   | 13,000         | 39,000           |               |                 |                   |                            |        |           |         |           |               |               |             |          |              |              |             |                             |           |  |                                  |       |           |
| 1882   | 17,000         | 24,000           |               |                 |                   |                            |        |           |         |           |               |               |             |          |              |              |             |                             |           |  |                                  |       |           |
| 1883   | 20,000         | 25,000           |               |                 |                   |                            |        |           |         |           |               |               |             |          |              |              |             |                             |           |  |                                  |       |           |
| 1884   | 40,000         | 11,000           |               |                 |                   |                            |        |           |         |           |               |               |             |          |              |              |             |                             |           |  |                                  |       |           |
| 1885   | 22,500         | 1,945            |               |                 |                   |                            |        |           |         |           |               |               |             |          |              |              |             |                             |           |  |                                  |       |           |
| 1886   | 21,500         | 6,750            |               |                 |                   |                            |        |           |         |           |               |               |             |          |              |              |             |                             |           |  |                                  |       |           |
| 1887   | 25,000         | 25,000           |               |                 |                   |                            |        |           |         |           |               |               |             |          |              |              |             |                             |           |  |                                  |       |           |
| 1888   | 20,000         | 10,000           |               |                 |                   |                            |        |           |         |           |               |               |             |          |              |              |             |                             |           |  |                                  |       |           |
| 1889   | 38,203         | 97               |               |                 |                   |                            |        |           |         |           |               |               |             |          |              |              |             |                             |           |  |                                  |       |           |
| 1890   | 74,320         | 7,266            |               |                 |                   |                            |        |           |         |           |               |               |             |          |              |              |             |                             |           |  |                                  |       |           |
| 1891   | 40,759         |                  |               |                 |                   |                            |        |           |         |           |               |               |             |          |              |              |             |                             |           |  |                                  |       |           |
| 1892   | 219,204        |                  |               |                 |                   |                            |        |           |         |           |               |               |             |          |              |              |             |                             |           |  |                                  |       |           |
| 1893   | 14,200         |                  |               |                 |                   |                            |        |           |         |           |               |               |             |          |              |              |             |                             |           |  |                                  |       |           |
| 1894   | 34,500         |                  |               |                 |                   |                            |        |           |         |           |               |               |             |          |              |              |             |                             |           |  |                                  |       |           |
| 1895   | 23,330         |                  |               |                 |                   |                            |        |           |         |           |               |               |             |          |              |              |             |                             |           |  |                                  |       |           |
| 1896   | 35,468         |                  |               |                 |                   |                            |        |           |         |           |               |               |             |          |              |              |             |                             |           |  |                                  |       |           |
| 1897   | 40,698         |                  |               |                 |                   |                            |        |           |         |           |               |               |             |          |              |              |             |                             |           |  |                                  |       |           |
| 1898   | 21,300         |                  |               |                 |                   |                            |        |           |         |           |               |               |             |          |              |              |             |                             |           |  |                                  |       |           |
| 1899   | 13,132         |                  |               |                 |                   |                            |        |           |         |           |               |               |             |          |              |              |             |                             |           |  |                                  |       |           |
| 1900   | 5,508          |                  |               |                 |                   |                            |        |           |         |           |               |               |             |          |              |              |             |                             |           |  |                                  |       |           |
| 1901   | 10,312         |                  |               |                 |                   |                            |        |           |         |           |               |               |             |          |              |              |             |                             |           |  |                                  |       |           |
| 1902   | 7,209          |                  |               |                 |                   |                            |        |           |         |           |               |               |             |          |              |              |             |                             |           |  |                                  |       |           |
| 1903   | 8,674          | 22               | 1,960,604     | 1,294,866       | 28,308            | 332,600                    | 5,914  | 38,441    | 8,000   | 20,000    |               | 95,000        | 5,500       | 79,195   | 705,334      | 115          | 115         | 2,163                       | 9,734     | 118,185  |                                  |       |           |
| 1904   | 12,402         | 73               | 2,190,000     | 1,289,910       | 30,425            | 307,068                    |        |           | 7,560   | 24,480    |               | 125,750       | 7,084       | 128,719  | 767,827      | 5,000        | 5,000       | 20,211                      | 13,145    | 83,826   |                                  |       |           |
| 1905   | 15,035         | 100              | 2,854,564     | 1,056,188       | 23,718            | 119,430                    | 11,500 | 43,500    | 12,000  | 20,000    |               | 175,000       | 31,250      | 109,563  | 853,810      | 30,533       | 16,056      | 200                         | 2,310     |  |                                  |       |           |
| 1906   |                |                  | 2,814,000     | 908,800         | 25,920            | 259,200                    | 21,000 | 69,000    | 12,000  | 36,000    |               | 85,465        | 5,128       | 127,965  | 826,831      | 41,350       | 34,350      | 19,080                      | 9,540     | 69,021   |                                  |       |           |
| 1907   |                |                  | 4,318,739     | 2,633,541       | 26,610            | 353,423                    | 7,300  | 50,000    | 12,000  | 36,000    |               | 385,000       | 35,100      | 101,079  | 895,272      | 17,500       | 20,500      | 21,196                      | 19,076    | 36,904   |                                  |       |           |
| 1908   |                |                  | 6,244,347     | 4,082,052       | 25,000            | 250,000                    | 12,000 | 75,000    | 12,000  | 48,000    | \$8,500       | 573,975       | 42,857      | 108,414  | 800,163      | 25,934       | 55,274      | 21,000                      | 3,000     | 598,618  |                                  |       |           |
| 1909   | 804            | 2                | 5,409,392     | 3,513,192       | 40,740            | 516,500                    | 10,000 | 50,000    | 10,000  | 30,000    | 9,500         | 266,315       | 19,988      | 136,202  | 1,195,892    | 14,027       | 26,688      | 2,292                       | 2,000     |  |                                  |       |           |
| 1910   |                |                  | 5,127,266     | 3,185,433       | 45,872            | 591,193                    |        |           | 6,000   | 12,000    | 4,900         | 319,491       | 23,999      | 148,723  | 1,351,653    | 450          | 800         | 849                         | 1,694     | 176,558  |                                  |       |           |
| 1911   |                |                  | 4,924,288     | 3,313,972       | 15,208            | 15,208                     |        |           | 7,592   | 16,113    | 5,000         | 229,019       | 17,256      | 160,259  | 1,442,913    | 15,650       | 41,023      | 200                         | 2,310     |  |                                  |       |           |
| 1912   |                |                  | 4,434,590     | 2,798,384       | 78,672            | 78,672                     |        |           | 10,390  | 46,370    | 3,000         | 76,495        | 6,333       | 174,892  | 1,692,358    | 11,929       | 12,028      | 1,000                       | 3,000     | 955,668  |                                  |       |           |
| 1913   | 2,322          | 27               | 4,143,690     | 2,672,680       | 11,287,794        | 77,578                     |        |           | 10,000  | 40,000    | 2,500         | 255,095       | 15,140      | 204,912  | 1,752,106    | 7,425        | 20,135      | 1,894                       | 1,694     | 176,558  |                                  |       |           |
| 1914   |                |                  | 3,558,690     | 1,957,279       | 1,250,000         | 75,000                     |        |           | 20,000  | 60,000    | 2,100         | 331,151       | 8,025       | 133,557  | 1,244,971    | 8,263        | 14,566      | 2,000                       | 3,000     | 598,618  |                                  |       |           |
| 1915   |                |                  | 2,931,098     | 1,843,661       | 1,729,035         | 120,783                    |        |           |         |           | 700           | 350,171       | 29,491      | 88,969   | 820,312      | 6,507        | 1,511       | 1,894                       | 1,694     | 176,558  |                                  |       |           |
| 1916   |                |                  | 2,875,468     | 1,871,930       | 2,083,664         | 139,522                    |        |           |         |           | 600           | 320,700       | 8,552       | 82,005   | 760,912      | 6,233        | 10,549      | 1,894                       | 1,694     | 176,558  |                                  |       |           |
| 1917   |                |                  | 4,669,583     | 5,491,430       | 1,670,476         | 194,793                    |        |           |         |           | 300           | 188,368       | 16,902      | and tile | 939,081      | 6,276        | 10,321      | 1,894                       | 1,694     | 176,558  |                                  |       |           |
| 1918   |                |                  | 10,125,190    | 13,567,755      | 2,088,959         | 224,279                    |        |           |         |           |               | 110,481       | 15,540      | 43,381   | 638,676      | 12,634       | 11,820      | 1,894                       | 1,694     | 176,558  |                                  |       |           |
| 1919   |                |                  | 15,076,633    | 20,805,754      | 4,148,476         | 458,812                    |        |           |         |           |               | 125,400       | 8,787       | and tile | 1,185,154    | 11,329       | 33,343      | 1,894                       | 1,694     | 176,558  |                                  |       |           |
| 1920   |                |                  | 14,026,536    | 21,488,653      | 6,225,835         | 553,465                    |        |           | 6,502   | 6,577     |               | 131,466       | 10,371      | 127,854  | 2,333,941    | 18,684       | 91,763      | 1,894                       | 1,694     | 176,558  |                                  |       |           |
| 1921   |                |                  | 12,395,605    | 25,795,254      | 6,944,277         | 638,936                    |        |           |         |           |               | 214,468       | 13,314      | and tile | 3,208,448    | 29,055       | 62,866      | 1,894                       | 1,694     | 176,558  |                                  |       |           |
| 1922   |                |                  | 37,726,367    | 52,930,093      | 23,254,549        | 1,653,571                  |        |           |         |           |               | 300,400       | 15,450      | 240,424  | 4,190,485    | 54,924       | 66,519      | 1,894                       | 1,694     | 176,558  |                                  |       |           |
| 1923   | 714            | 6                | 158,665,019   | 154,063,733     | 134,799,452       | 8,760,961                  |        |           |         |           |               | 440,563       | 24,787      | 310,897  | 5,307,968    | 128,825      | 59,272      | 1,894                       | 1,694     | 176,558  |                                  |       |           |
| 1924   | 751            | 5,515            | 119,027,428   | 147,474,953     | 122,838,521       | 9,191,395                  |        |           |         |           |               | 1,889,285     | 88,942      | 301,957  | 5,030,259    | 84,065       | 132,855     | 1,894                       | 1,694     | 176,558  |                                  |       |           |
| 1925   | 409            | 15,444           | 121,214,551   | 173,215,593     | 98,226,700        | 8,704,894                  |        |           |         |           |               | 3,811,270     | 335,038     | 196,955  | 3,300,748    | 217,707      | 106,817     | 1,894                       | 1,694     | 176,558  |                                  |       |           |
| 1926   | 94             | 42,658           | 105,826,337   | 174,084,324     | 91,054,793        | 8,965,307                  |        |           |         |           |               | 4,025,465     | 200,459     | 238,326  | 2,954,067    | 86,767       | 99,076      | 1,894                       | 1,694     | 176,558  |                                  |       |           |
| 1927   | 2,345          | 14,819           | 103,625,615   | 114,583,011     | 59,749,559        | 7,117,081                  |        |           |         |           |               | 3,934,525     | 290,198     | 214,332  | 2,714,398    | 147,621      | 206,175     | 1,894                       | 1,694     | 176,558  |                                  |       |           |
| 1928   | 2,187          | 20               | 120,549,303   | 126,709,373     | 110,432,906       | 9,058,485                  |        |           |         |           |               | 10,929,535    | 538,110     | 148,392  | 2,191,943    | 99,781       | 55,539      | 1,894                       | 1,694     | 176,558  |                                  |       |           |
| 1929   | 991            | 34               | 182,444,261   | 261,871,493     | 228,708,726       | 17,410,493                 |        |           |         |           |               | 12,525,565    | 1,076,504   | 199,260  | 2,473,675    | 88,066       | 49,304      | 1,894                       | 1,694     | 176,558  |                                  |       |           |
| 1930   |                |                  | 114,533,366   | 148,549,776     | 156,470,411       | 14,065,968                 |        |           |         |           |               | 23,695,673    | 2,152,928   | 172,468  | 1,677,406    | 78,643       | 70,693      | 1,894                       | 1,694     | 176,558  |                                  |       |           |
| 1931   | 1,292          | 64               | 85,382,013    | 66,999,266      | 117,606,814       | 6,489,448                  |        |           |         |           |               | 11,618,905    | 620,851     | 85,593   | 907,350      | 27,972       | 25,359      | 1,894                       | 1,694     | 176,558  |                                  |       |           |
| 1932   | 6,691          | 13               | 78,361,176    | 67,390,611      | 83,699,705        | 5,379,497                  |        |           |         |           |               | 8,011,766     | 938,652     | 58,099   | 747,301      | 38,452       | 21,978      | 1,894                       | 1,694     | 176,558  |                                  |       |           |
| 1933   | 15,861         | 118              | 67,299,626    | 60,023,645      | 70,490,726        | 4,957,928                  |        |           |         |           |               | 6,672,359     | 335,310     | 40,100   | 639,854      | 14,195       | 10,142      | 1,894                       | 1,694     | 176,558  |                                  |       |           |
| 1934   | 57,924         | 535              | 60,297,000    | 59,711,578      | 58,220,382        | 3,421,320                  |        |           |         |           |               | 8,202,017     | 479,710     | 30,739   | 685,611      | 13,763       | 7,772       | 1,894                       | 1,694     | 176,558  |                                  |       |           |
| Totals | \$893,399      | \$295,802        | 1,477,916,477 | \$1,737,400,896 |                   | \$110,950,280              | 87,761 | \$479,781 | 140,754 | \$405,670 | \$45,200      | 96,058,328    | \$7,394,361 |          | \$58,169,815 | 1,355,321    | \$1,392,677 |                             | \$161,026 | \$72,093,508                                       |                                  |       |           |

\* Commercial production of petroleum in Los Angeles began at least as early as 1874, in the Newhall district, but detailed county segregations are not available for the early years.  
1 Includes granite, crushed rock, rubble, paving blocks, sand, gravel.  
2 Asphalt, tons.  
3 Natural gas, thousand cubic feet.

4 Included in Riverside County production.  
5 Included in Monterey County production.  
6 Sandstone.  
7 Serpentine.  
8 See under "Unapportioned."





## MINERAL PRODUCTION OF LASSEN COUNTY, 1880-1934

| Year        | Gold,<br>value | Silver,<br>value | Miscel-<br>laneous<br>stone,<br>value | Miscellaneous and unapportioned |           |                          |
|-------------|----------------|------------------|---------------------------------------|---------------------------------|-----------|--------------------------|
|             |                |                  |                                       | Amount                          | Value     | Substance                |
| 1880.....   | \$25,900       |                  |                                       |                                 |           |                          |
| 1881.....   | 71,000         | \$1,000          |                                       |                                 |           |                          |
| 1882.....   | 100,000        | 20,000           |                                       |                                 |           |                          |
| 1883.....   | 20,000         | 5,000            |                                       |                                 |           |                          |
| 1884.....   | 119,060        | 341              |                                       |                                 |           |                          |
| 1885.....   | 15,000         | 150              |                                       |                                 |           |                          |
| 1886.....   | 25,812         | 135              |                                       |                                 |           |                          |
| 1887.....   | 24,108         | 304              |                                       |                                 |           |                          |
| 1888.....   | 50,000         | 200              |                                       |                                 |           |                          |
| 1889.....   | 97,503         | 215              |                                       |                                 |           |                          |
| 1890.....   | 14,890         | 300              |                                       |                                 |           |                          |
| 1891.....   | 3,676          |                  |                                       |                                 |           |                          |
| 1892.....   | 15,400         |                  |                                       |                                 |           |                          |
| 1893.....   |                |                  |                                       |                                 |           |                          |
| 1894.....   | 35,283         |                  |                                       |                                 |           |                          |
| 1895.....   | 25,000         |                  |                                       |                                 |           |                          |
| 1896.....   | 40,300         |                  |                                       |                                 |           |                          |
| 1897.....   | 49,100         | 850              |                                       |                                 |           |                          |
| 1898.....   | 37,460         | 300              |                                       |                                 |           |                          |
| 1899.....   | 28,898         |                  |                                       |                                 |           |                          |
| 1900.....   | 19,807         | 676              |                                       |                                 |           |                          |
| 1901.....   | 5,900          | 200              |                                       |                                 |           |                          |
| 1902.....   | 23,410         | 244              |                                       |                                 |           |                          |
| 1903.....   | 91,102         | 1,203            |                                       |                                 |           |                          |
| 1904.....   | 116,993        | 1,515            |                                       |                                 |           |                          |
| 1905.....   |                |                  |                                       |                                 |           |                          |
| 1906.....   | "              | "                |                                       |                                 |           |                          |
| 1907.....   |                |                  |                                       |                                 |           |                          |
| 1908.....   | 7,284          | 783              |                                       |                                 |           |                          |
| 1909.....   | \$116,327      | \$1,463          |                                       |                                 | \$217,521 | Unapportioned, 1900-1909 |
| 1910.....   | \$82,180       | \$972            |                                       |                                 |           |                          |
| 1911.....   | "              | "                |                                       |                                 | 1,522     | Gold and silver.         |
| 1912.....   |                |                  |                                       |                                 |           |                          |
| 1913.....   |                | 2                | \$2,030                               |                                 |           | "                        |
| 1914.....   | 1,250          | 4                | 775                                   |                                 |           | "                        |
| 1915.....   |                |                  | 870                                   |                                 |           |                          |
| 1916.....   |                |                  | 9,725                                 |                                 |           |                          |
| 1917.....   |                |                  | 376                                   |                                 |           |                          |
| 1918.....   |                |                  | 800                                   |                                 |           |                          |
| 1919.....   |                |                  | 1,100                                 |                                 |           |                          |
| 1920.....   |                |                  | 7,313                                 |                                 | 5,000     | Other minerals.          |
| 1921.....   | 39,943         | 1,234            | 42,308                                |                                 |           |                          |
| 1922.....   | "              | "                | 9,540                                 |                                 | 17,877    | Brick, gold and silver.  |
| 1923.....   | "              | "                | 7,600                                 |                                 | 240       | Gold and silver.         |
| 1924.....   | 2,250          | 44               | 35,614                                |                                 |           |                          |
| 1925.....   | 1,130          | 24               | 1,250                                 |                                 |           |                          |
| 1926.....   | 67             | 1                | 18,995                                |                                 |           |                          |
| 1927.....   | 531            | 9                | 47,885                                |                                 | 1,000     | Granite curbing.         |
| 1928.....   | 492            | 8                | 73,399                                | 1,550 cu. ft.                   | 2,600     | Granite.                 |
| 1929.....   | 168            | 2                | 88,328                                |                                 | 200       | Other minerals.          |
| 1930.....   | 2,946          | 23               | 14,600                                |                                 | 525       | Other minerals.          |
| 1931.....   | 241            | 2                |                                       |                                 | 1,600     | Other minerals.          |
| 1932.....   | 460            | 3                | 109,105                               |                                 |           |                          |
| 1933.....   | 8,309          | 68               | 35,228                                |                                 | 2,094     | Copper, granite, lead.   |
| 1934.....   | 14,689         | 278              | "                                     | 304 lbs.                        | 24        | Copper.                  |
| Totals..... | \$1,334,869    | \$37,553         | \$506,841                             |                                 | 13,327    | Other minerals.          |
|             |                |                  |                                       |                                 | \$263,530 |                          |

<sup>1</sup>Lawver, A. M. in 'Production of Precious Metals in U. S.': Report of Director of Mint, 1884, p. 175, 1885.

<sup>2</sup>See under 'Unapportioned.'

<sup>3</sup>Includes Modoc and Colusa Counties' production.

<sup>4</sup>Includes Colusa County production.

<sup>5</sup>Copper production erroneously reported from Lassen County in the years 1913 and 1914, on account of shipping point being Doyle, while producing copper mines were located in Plumas County.

## MINERAL PRODUCTION OF

| Year    | Gold,<br>value | Silver,<br>value | Copper    |           | Brick |          |
|---------|----------------|------------------|-----------|-----------|-------|----------|
|         |                |                  | Pounds    | Value     | M     | Value    |
| 1893.   | \$150,696      | \$314            |           |           |       |          |
| 1894.   | 107,791        | 180              |           |           |       |          |
| 1895.   | 162,323        |                  |           |           |       |          |
| 1896.   | 104,339        | 1,240            |           |           |       |          |
| 1897.   | 85,963         |                  |           |           |       |          |
| 1898.   | 94,884         | 50               |           |           | 400   | \$2,800  |
| 1899.   | 73,758         | 292              |           |           | 439   | 3,070    |
| 1900.   | 104,134        | 3,833            | 500,000   | \$77,500  | 500   | 3,000    |
| 1901.   | 82,749         | 2,600            | 108,430   | 17,077    | 500   | 3,000    |
| 1902.   | 35,128         | 3                | 18,600    | 2,139     | 230   | 1,840    |
| 1903.   | 93,070         | 3                | 36,000    | 4,680     | 216   | 972      |
| 1904.   | 75,303         | 25               | 10,300    | 1,313     | 750   | 3,750    |
| 1905.   | 50,867         | 10,014           |           |           |       |          |
| 1906.   | 22,390         | 508              |           |           |       |          |
| 1907.   | 13,303         | 506              | 1,895     | 379       | 1,250 | 12,500   |
| 1908.   | 45,107         | 1,264            | 113,293   | 15,454    | 250   | 2,250    |
| 1909.   | 14,716         | 403              | 5,090     | 635       |       |          |
| 1910.   | 10,076         | 850              | 336,667   | 42,876    | 740   | 3,700    |
| 1911.   | 1,958          | 77               | 14,608    | 1,826     | 270   | 1,350    |
| 1912.   | 9,162          | 1,162            | 248,129   | 40,941    | 300   | 1,500    |
| 1913.   | 14,489         | 1,617            | 532,403   | 82,522    | 315   | 1,650    |
| 1914.   | 4,506          | 36               | 35,359    | 4,703     |       |          |
| 1915.   | 11,214         | 2,126            | 40,294    | 7,051     | 200   | 1,400    |
| 1916.   | 10,306         | 1,772            | 124,286   | 30,574    |       |          |
| 1917.   | 18,914         | 489              | 372,123   | 101,590   |       |          |
| 1918.   | 7,583          | 4,206            | 245,519   | 60,643    |       |          |
| 1919.   | 17,705         | 1,700            | 175,406   | 32,625    |       |          |
| 1920.   | 6,382          | 1,488            | 89,846    | 16,532    |       |          |
| 1921.   | 1,053          | 27               |           |           |       |          |
| 1922.   | 1,594          | 3,500            |           |           |       |          |
| 1923.   | 12,074         | 541              |           |           |       |          |
| 1924.   | 3,208          | 176              | 34,467    | 4,515     |       |          |
| 1925.   | 2,366          | 82               |           |           |       |          |
| 1926.   | 1,708          | 22               |           |           |       |          |
| 1927.   | 4,181          | 38               |           |           |       |          |
| 1928.   | 3,580          | 144              | 14,171    | 2,031     |       |          |
| 1929.   | 1,474          | 475              | 19,254    | 3,389     |       |          |
| 1930.   | 1,062          | 70               | 98        | 13        |       |          |
| 1931.   | 2,405          | 11               |           |           |       |          |
| 1932.   | 9,230          | 52               |           |           |       |          |
| 1933.   | 8,962          | 712              | 496       | 32        |       |          |
| 1934.   | 13,165         | 69               |           |           |       |          |
| Totals. | \$1,494,878    | \$43,677         | 3,076,643 | \$551,040 | 6,360 | \$42,782 |

<sup>1</sup> Madera County created March 11, 1893, from a portion of Fresno County. Between 80 per cent and 90 per cent of the gold and silver produced in Fresno County prior to 1893 was from that part now in Madera County.

<sup>2</sup> Includes crushed rock, rubble, rip-rap, sand, gravel.

<sup>3</sup> See under 'Unapportioned.'

## MADERA COUNTY, 1893-1934

| Granite    |             | Miscellaneous stone <sup>1</sup> value | Miscellaneous and unapportioned |             |  |
|------------|-------------|--|---------------------------------|-------------|--|
| Cubic feet | Value       |  | Amount                          | Value       | Substance                                      |
| 48,858     | \$31,494    |  |                                 |             |  |
| 39,590     | 49,662      |  |                                 |             |  |
| 48,628     | 73,525      | \$7,800                                |                                 |             |  |
| 39,030     | 37,215      | 1,249                                  |                                 |             |  |
| 23,103     | 49,673      | 500                                    |                                 |             |  |
| 47,433     | 36,000      | 2,500                                  |                                 |             |  |
| 124,015    | 80,000      |  |                                 | \$65,000    | Unapportioned, 1900-1909.                      |
| 96,716     | 294,799     | 600                                    |                                 |             |  |
| 105,845    | 78,041      | 4,000                                  |                                 |             |  |
| 128,581    | 389,800     | 1,000                                  |                                 |             |  |
| 113,627    | 98,083      | 500                                    |                                 |             |  |
| 42,316     | 123,106     |  |                                 |             |  |
| 65,472     | 176,416     |  |                                 |             |  |
| 99,278     | 93,372      |  |                                 |             |  |
| 140,086    | 123,668     | 2,140                                  | 2,279 lbs.                      | 84          | Lead.  |
| 142,622    | 111,380     | 5,836                                  |                                 |             |  |
| 99,192     | 74,152      | 1,112                                  |                                 |             |  |
| 99,900     | 74,190      | 800                                    |                                 |             |  |
| 82,135     | 56,058      | 3,213                                  | 5,533 lbs.                      | 249         | Lead.  |
| 150,994    | 270,123     | 1,466                                  |                                 |             |  |
|            | 186,543     | 6,221                                  | 50 tons                         | 1,000       | Pumice.  |
|            | 84,632      | 37,640                                 |                                 | 1,000       | Other minerals.                                |
| 128,865    | 172,191     | 7,915                                  |                                 |             |  |
|            | 114,400     | 1,525                                  | 221 lbs.                        | 19          | Lead.  |
|            | 40,355      | 1,540                                  |                                 |             |  |
|            | 64,358      | 1,500                                  |                                 |             |  |
|            | 98,523      |  |                                 |             |  |
|            | 461,822     | 4,765                                  |                                 |             |  |
|            | 454,222     | 16,948                                 |                                 |             |  |
|            | 486,670     |  |                                 | 18,750      | Other minerals.                                |
|            | 935,820     | 11,750                                 |                                 |             |  |
|            | 1,358,410   | 16,600                                 |                                 |             |  |
|            | 418,683     | 5,325                                  |                                 |             |  |
|            |             |  |                                 | 1,055,447   | Granite paving blocks and miscellaneous stone. |
| "          |             | "                                      |                                 | 508,740     | Granite and miscellaneous stone.               |
| "          |             | "                                      |                                 | 1,022,072   | Granite and miscellaneous stone.               |
| "          |             | "                                      | 4,933 lbs.                      | 250         | Lead.  |
| "          |             | "                                      |                                 | 674,387     | Granite and miscellaneous stone.               |
| "          |             | 2,015                                  |                                 | 483,912     | Other minerals.                                |
| "          |             | "                                      |                                 | 288,739     | Granite and miscellaneous stone.               |
| "          |             | "                                      | 5,442 lbs.                      | 210         | Lead.  |
| "          |             | "                                      |                                 | 123,198     | Granite, miscellaneous stone, volcanic ash.    |
| "          |             | 53,590                                 |                                 | 197,320     | Granite and volcanic ash.                      |
|            | \$7,197,386 | \$200,050                              |                                 | \$4,440,377 |  |

## MINERAL PRODUCTION OF

| Year        | Brick    |             | Miscellaneous stone <sup>1</sup> |              |
|-------------|----------|-------------|----------------------------------|--------------|
|             | M        | Value       | Tons                             | Value        |
| 1888.....   | 1,600    | \$10,000    |                                  |              |
| 1889.....   | *2,000   | 12,000      |                                  |              |
| 1890.....   | *5,000   | 30,000      |                                  |              |
| 1891.....   | *10,000  | 60,000      |                                  |              |
| 1892.....   | *12,000  | 72,000      |                                  |              |
| 1893.....   | 18,000   | 108,000     |                                  |              |
| 1894.....   | 28,500   | 172,500     |                                  | \$16,850     |
| 1895.....   | 29,000   | 145,000     |                                  | 7,790        |
| 1896.....   | 15,000   | 85,000      | 7,849                            | 8,260        |
| 1897.....   | 15,000   | 89,000      | 6,000                            | 7,200        |
| 1898.....   | 15,500   | 66,000      | 1,710                            | 1,800        |
| 1899.....   | 16,500   | 76,000      | 4,400                            | 5,150        |
| 1900.....   | 25,000   | 200,000     | 3,000                            | 2,500        |
| 1901.....   | 11,320   | 100,240     | 34,000                           | 27,987       |
| 1902.....   | 14,600   | 97,700      | 149,450                          | 105,350      |
| 1903.....   | 13,819   | 78,095      | 144,715                          | 140,332      |
| 1904.....   | 20,500   | 132,000     | 216,576                          | 170,995      |
| 1905.....   | 22,877   | 163,585     | 113,000                          | 44,250       |
| 1906.....   | 23,900   | 199,300     | 54,000                           | 53,000       |
| 1907.....   | 16,000   | 118,000     | 157,100                          | 134,111      |
| 1908.....   | 10,000   | 50,000      | 111,686                          | 66,700       |
| 1909.....   | 4,500    | 105,000     | 132,010                          | 67,010       |
| 1910.....   | 22,497   | 99,185      | 112,000                          | 74,700       |
| 1911.....   | 19,695   | 87,445      | 173,646                          | 108,786      |
| 1912.....   | 18,000   | 88,200      | 5,300                            | 3,000        |
| 1913.....   | 16,000   | 70,500      | 428,367                          | 198,953      |
| 1914.....   | 15,000   | 55,000      |                                  | 490,137      |
| 1915.....   | 10,000   | 50,000      |                                  | 101,528      |
| 1916.....   | "        |             |                                  | 74,000       |
| 1917.....   | "        |             |                                  | 158,582      |
| 1918.....   | "        |             |                                  | 89,458       |
| 1919.....   | "        |             |                                  | 127,111      |
| 1920.....   | "        |             |                                  | 208,302      |
| 1921.....   | "        |             |                                  | 202,333      |
| 1922.....   | "        |             | "                                |              |
| 1923.....   | "        |             |                                  | 516,836      |
| 1924.....   | "        |             |                                  | 356,035      |
| 1925.....   | "        |             |                                  | 244,602      |
| 1926.....   | "        |             |                                  | 413,712      |
| 1927.....   | "        |             |                                  | 381,256      |
| 1928.....   | "        |             |                                  | 309,218      |
| 1929.....   | "        |             | "                                |              |
| 1930.....   | "        |             | "                                |              |
| 1931.....   | "        |             | "                                |              |
| 1932.....   | "        |             | "                                | 189,937      |
| 1933.....   | "        |             | "                                |              |
| 1934.....   | "        |             |                                  | 136,127      |
| Totals..... | *434,808 | \$2,619,750 |                                  | *\$5,243,998 |

\* Estimated.

<sup>1</sup> Includes crushed rock, rubble, rip-rap, sand, gravel.<sup>2</sup> See under 'Unapportioned.'

[illegible]

## MINERAL PRODUCTION OF MARIPOSA COUNTY, 1880-1934

| Year      | Gold,<br>value | Silver,<br>value | Copper  |          | Miscellaneous and unapportioned |                                 |  |
|-----------|----------------|------------------|---------|----------|---------------------------------|---------------------------------|--|
|           |                |                  | Pounds  | Value    | Amount                          | Value                           | Substance  |
| 1880..... | \$150,017      | \$1,300          |         |          |                                 |                                 |  |
| 1881..... | 200,000        | 1,200            |         |          |                                 |                                 |  |
| 1882..... | 250,000        | 4,000            |         |          |                                 |                                 |  |
| 1883..... | 220,000        | 3,000            |         |          |                                 |                                 |  |
| 1884..... | 180,000        |                  |         |          |                                 |                                 |  |
| 1885..... | 149,177        | 100              |         |          |                                 |                                 |  |
| 1886..... | 197,600        |                  |         |          |                                 |                                 |  |
| 1887..... | 187,165        | 96               |         |          |                                 |                                 |  |
| 1888..... | 175,000        | 250              |         |          |                                 |                                 |  |
| 1889..... | 145,819        | 210              |         |          |                                 |                                 |  |
| 1890..... | 124,265        | 22               |         |          |                                 |                                 |  |
| 1891..... | 84,414         |                  |         |          |                                 |                                 |  |
| 1892..... | 81,011         | 67               |         |          |                                 |                                 |  |
| 1893..... | 164,116        | 307              |         |          |                                 |                                 |  |
| 1894..... | 153,708        | 39               |         |          |                                 |                                 |  |
| 1895..... | 216,622        | 7                |         |          |                                 |                                 |  |
| 1896..... | 335,637        | 180              |         |          |                                 |                                 |  |
| 1897..... | 451,427        | 660              |         |          |                                 |                                 |  |
| 1898..... | 336,418        | 993              |         |          |                                 |                                 |  |
| 1899..... | 562,829        | 2,207            |         |          | 110 sq'r's                      | \$600                           | Slate.   |
| 1900..... | 157,663        | 13,853           |         |          |                                 |                                 |  |
| 1901..... | 504,928        | 4,787            | 191,622 | \$30,180 | 70,000 lbs.                     | 3,080                           | Lead.  |
| 1902..... | 631,478        | 3,880            | 104,700 | 11,940   |                                 |                                 |  |
| 1903..... | 542,355        | 3,353            | 61,627  | 6,808    |                                 |                                 |  |
| 1904..... | 429,771        | 2,839            | 11,500  | 1,466    |                                 |                                 |  |
| 1905..... | 386,380        | 5,231            | 12,541  | 1,956    |                                 | 25                              | Platinum.  |
| 1906..... | 366,394        | 3,377            |         |          |                                 |                                 |  |
| 1907..... | 405,498        | 4,500            |         |          | 1,142 lbs.                      | 60                              | Lead.  |
| 1908..... | 439,862        | 4,732            | 29,124  | 2,958    |                                 | 36,560                          | Miscellaneous stone.   |
| 1909..... | 396,465        | 2,729            |         |          |                                 | 62,430                          | Miscellaneous stone.   |
| 1910..... | 317,580        | 2,364            |         |          |                                 | 8,431                           | Unapportioned, 1900-1909.                                      |
| 1911..... | 172,532        | 1,390            | 14,641  | 1,830    |                                 | 21,501                          | Miscellaneous stone.   |
| 1912..... | 160,541        | 6,796            | 284,587 | 46,957   |                                 | 4,800                           | Barytes.   |
| 1913..... | 171,034        | 7,430            | 416,031 | 64,485   |                                 |                                 |  |
| 1914..... | 131,458        | 677              | 277,472 | 36,904   | 2,000 tons<br>100 cu. ft.       | 3,130<br>15,366<br>3,000<br>100 | Other minerals.<br>Miscellaneous stone.<br>Barytes.<br>Marble. |
| 1915..... | 385,577        | 2,175            | 38,630  | 6,760    |                                 | 17,214                          | Miscellaneous stone.   |
| 1916..... | 401,718        | 2,680            | 162,318 | 39,930   | 1,857 lbs.                      | 600                             | Other minerals.  |
| 1917..... | 313,296        | 3,221            | 53,381  | 14,583   |                                 | 128                             | Lead.  |
| 1918..... | 337,682        | 5,083            | 30,294  | 7,483    | 1,075 lbs.                      | 4,143                           | Other minerals.  |
| 1919..... | 253,392        | 4,139            | 24,879  | 4,627    |                                 | 39,372                          | Miscellaneous stone.   |
| 1920..... | 261,830        | 4,705            |         |          |                                 | 92                              | Lead.  |
| 1921..... | 331,295        | 5,251            |         |          |                                 | 13,399                          | Other minerals.  |
| 1922..... | 218,571        | 3,301            |         |          |                                 | 7,646                           | Miscellaneous stone.   |
| 1923..... | 141,883        | 1,735            |         |          |                                 | 1,856                           | Chromite and lead.   |
| 1924..... | 182,099        | 1,608            |         |          |                                 | 400                             | Miscellaneous stone.   |
| 1925..... | 192,810        | 1,758            |         |          |                                 | 8                               | Other minerals.  |
| 1926..... | 182,313        | 1,518            |         |          |                                 | 400                             | Miscellaneous stone.   |
| 1927..... | 183,805        | 1,376            |         |          |                                 | 400                             | Miscellaneous stone.   |
|           |                |                  |         |          |                                 | 4,096                           | Barytes, copper, lead.   |
|           |                |                  |         |          |                                 | 5,655                           | Miscellaneous stone.   |
|           |                |                  |         |          |                                 | 400                             | Barytes and pyrites.   |
|           |                |                  |         |          |                                 | 4,960                           | Miscellaneous stone.   |
|           |                |                  |         |          |                                 |                                 | Barytes, pyrites and   |
|           |                |                  |         |          |                                 |                                 | miscellaneous stone.   |
|           |                |                  |         |          |                                 | 27,293                          | Barytes, pyrites and   |
|           |                |                  |         |          |                                 |                                 | miscellaneous stone.   |
|           |                |                  |         |          |                                 | 3,000                           | Other minerals.  |
|           |                |                  |         |          |                                 | 48,000                          | Miscellaneous stone.   |
|           |                |                  |         |          |                                 | 3,500                           | Other minerals.  |
|           |                |                  |         |          |                                 | 436,794                         | Miscellaneous stone.   |
|           |                |                  |         |          |                                 | 130,804                         | Miscellaneous stone.   |
|           |                |                  |         |          |                                 | 5,089                           | Barytes, copper and  |
|           |                |                  |         |          |                                 |                                 | pyrites.   |
|           |                |                  |         |          |                                 | 2,000                           | Granite.   |
|           |                |                  |         |          |                                 | 259,677                         | Miscellaneous stone.   |
|           |                |                  |         |          |                                 | 53,020                          | Barytes, pyrite, slate.  |



## MINERAL PRODUCTION OF MARIPOSA COUNTY, 1880-1934—Continued

| Year        | Gold,<br>value | Silver,<br>value | Copper     |           | Miscellaneous and unapportioned |             |   |
|-------------|----------------|------------------|------------|-----------|---------------------------------|-------------|---|
|             |                |                  | Pounds     | Value     | Amount                          | Value       | Substance                                 |
| 1928.....   | \$120,568      | \$2,199          | 1          |           | 3,728 tons                      | \$13,988    | Granite.                                  |
|             |                |                  |            |           |                                 | 21,776      | Silica.                                   |
|             |                |                  |            |           |                                 | 68,037      | Miscellaneous stone.                      |
| 1929.....   | 91,052         | 651              | 6,302      | \$1,109   |                                 | 55,597      | Barite, copper.                           |
|             |                |                  |            |           |                                 | 64,966      | Miscellaneous stone.                      |
| 1930.....   | 58,985         | 318              | 3,629      | 472       |                                 | 86,239      | Barite, silica.                           |
|             |                |                  |            |           |                                 | 15,133      | Miscellaneous stone.                      |
| 1931.....   | 88,600         | 551              | 1          |           |                                 | 68,557      | Barite, granite, lead.                    |
|             |                |                  |            |           |                                 | 33,410      | Miscellaneous stone.                      |
|             |                |                  |            |           |                                 | 71,080      | Barite, copper, granite,<br>lead, silica. |
| 1932.....   | 169,627        | 636              | 1          |           |                                 | 131,625     | Miscellaneous stone                       |
|             |                |                  |            |           |                                 | 77,366      | Barite, copper, granite, lead.            |
| 1933.....   | 254,663        | 1,112            | 1          |           |                                 | 280,016     | Miscellaneous stone.                      |
|             |                |                  |            |           |                                 | 39,327      | Barite, copper, granite.                  |
| 1934.....   | 517,443        | 3,214            | 1,771      | 142       |                                 | 185,960     | Miscellaneous stone.                      |
|             |                |                  |            |           |                                 | 101,149     | Barite, granite, lead.                    |
| Totals..... | \$14,266,373   | \$129,817        | 11,725,049 | \$280,590 |                                 | \$2,543,255 |   |

<sup>1</sup> See under 'Unapportioned.'

MINERAL PRODUCTION OF

| Year        | Brick |          | Manganese ore |           |
|-------------|-------|----------|---------------|-----------|
|             | M     | Value    | Tons          | Value     |
| 1880.....   |       |          |               |           |
| 1881.....   |       |          |               |           |
| 1882.....   |       |          |               |           |
| 1895.....   |       |          |               |           |
| 1896.....   |       |          |               |           |
| 1898.....   | 258   | \$1,080  |               |           |
| 1899.....   | 200   | 1,800    |               |           |
| 1900.....   | 25    | 400      |               |           |
| 1901.....   | 200   | 2,500    |               |           |
| 1902.....   | 200   | 2,000    |               |           |
| 1903.....   | 550   | 5,580    |               |           |
| 1904.....   | 260   | 3,120    |               |           |
| 1905.....   | 635   | 6,470    |               |           |
| 1906.....   | 500   | 5,000    |               |           |
| 1907.....   | 400   | 4,000    |               |           |
| 1908.....   | 260   | 2,600    |               |           |
| 1909.....   | 150   | 1,500    |               |           |
| 1910.....   |       |          |               |           |
| 1911.....   | 160   | 1,600    |               |           |
| 1912.....   |       |          |               |           |
| 1913.....   |       |          |               |           |
| 1914.....   |       |          |               |           |
| 1915.....   |       |          | 2,858         | \$23,036  |
| 1916.....   |       |          | 1,735         | 43,005    |
| 1917.....   | 1     |          | 1,541         | 40,515    |
| 1918.....   |       |          | 1,432         | 58,962    |
| 1919.....   |       |          |               |           |
| 1920.....   |       |          |               |           |
| 1921.....   | 1     |          | 1             |           |
| 1922.....   | 1     |          |               |           |
| 1923.....   |       |          |               |           |
| 1924.....   | 550   | 7,125    |               |           |
| 1925.....   | 1     |          |               |           |
| 1926.....   | 1     |          |               |           |
| 1927.....   | 1     |          |               |           |
| 1928.....   | 1     |          |               |           |
| 1929.....   | 1     |          |               |           |
| 1930.....   | 1     |          |               |           |
| 1931.....   |       |          |               |           |
| 1932.....   |       |          |               |           |
| 1933.....   |       |          |               |           |
| 1934.....   |       |          |               |           |
| Totals..... | 4,348 | \$44,775 | 7,566         | \$165,518 |

<sup>1</sup> Includes crushed rock, rubble, rip-rap, sand, gravel.  
<sup>2</sup> See under 'Unapportioned.'

## MENDOCINO COUNTY, 1880-1934

| Mineral water |           | Miscellaneous stone <sup>1</sup> , value | Miscellaneous and unapportioned |           |  |
|---------------|-----------|--|---------------------------------|-----------|--|
| Gallons       | Value     |  | Amount                          | Value     | Substance                                  |
|               |           |  |                                 | \$733     | Gold.                                      |
|               |           |  |                                 | 125       | Silver.                                    |
|               |           |  |                                 | 1,000     | Gold.                                      |
|               |           |  | 50 tons                         | 150       | Coal.                                      |
|               |           |  | 450 tons                        | 2,250     | Bituminous rock.                           |
| 17,470        | \$6,988   |  |                                 |           |  |
| 24,875        | 8,048     |  |                                 |           |  |
| 27,950        | 8,220     |  |                                 |           |  |
| 28,575        | 7,898     |  |                                 |           |  |
| 38,900        | 15,000    |  |                                 |           |  |
| 40,000        | 12,000    |  |                                 | 75        | Gold.                                      |
| 90,000        | 18,000    |  |                                 | 40        | Gold.                                      |
| 40,000        | 9,800     |  |                                 | 19        | Gold.                                      |
| 45,000        | 9,800     |  | 50 flasks                       | 1,825     | Quicksilver (1906).                        |
| 45,000        | 9,800     |  |                                 |           |  |
| 45,000        | 9,000     | \$1,200                                  |                                 | 18,000    | Unapportioned, 1900-1909.                  |
|               |           | 500                                      |                                 |           |  |
|               |           | 300                                      |                                 |           |  |
|               |           | 9,450                                    |                                 |           |  |
|               |           | 560                                      |                                 |           |  |
|               |           | 1,500                                    |                                 |           |  |
|               |           | 8,275                                    | 300 tons                        | 2,400     | Magnesite.                                 |
|               |           |  |                                 | 2,000     | Other minerals.                            |
|               |           | 5,600                                    |                                 | 4,300     | Brick, chromite, magnesite.                |
|               |           | 5,000                                    |                                 | 226       | Gold, platinum.                            |
|               |           | 7,000                                    | 555 tons                        | 44,200    | Chromite.                                  |
|               |           | 7,500                                    |                                 | 7,214     | Chromite, platinum.                        |
|               |           |  |                                 | 18,610    | Chromite, manganese, natural gas, platinum |
|               |           |  |                                 | 1,509     | Gold.                                      |
|               |           | 40,000                                   |                                 | 13        | Silver.                                    |
|               |           |  |                                 | 3,200     | Brick, manganese, natural gas, platinum.   |
|               |           | 18,762                                   |                                 | 1,800     | Brick, natural gas, platinum.              |
|               |           | 48,360                                   |                                 | 5,050     | Coal, natural gas.                         |
|               |           | 49,680                                   |                                 | 3,963     | Coal, natural gas, platinum, manganese.    |
|               |           | 11,603                                   |                                 | 4,930     | Brick, coal, natural gas.                  |
|               |           | 15,750                                   |                                 | 50        | Other minerals.                            |
|               |           | 44,630                                   |                                 | 3,040     | Brick and natural gas.                     |
|               |           | 40,420                                   |                                 | 20        | Other minerals.                            |
|               |           | 55,925                                   |                                 | 3,075     | Brick, natural gas.                        |
|               |           | 119,429                                  |                                 | 3,633     | Brick, limestone, natural gas.             |
|               |           | 70,755                                   |                                 | 1,952     | Other minerals.                            |
|               |           | 101,619                                  |                                 | 50        | Other minerals.                            |
|               |           |  |                                 | 155       | Gold.                                      |
|               |           | 35,010                                   |                                 | 118       | Limestone, natural gas.                    |
|               |           | 14,301                                   |                                 | 50        | Other minerals.                            |
| 442,770       | \$114,554 | \$713,129                                |                                 | \$135,775 |  |

## MINERAL PRODUCTION OF MERCED COUNTY, 1880-1934

| Year | Gold,<br>value | Silver,<br>value | Copper |          | Brick |         | Miscellaneous and unapportioned |         |  |
|------|----------------|------------------|--------|----------|-------|---------|---------------------------------|---------|--|
|      |                |                  | Pounds | Value    | M     | Value   | Amount                          | Value   | Substance  |
| 1880 | \$17,515       |                  |        |          |       |         |                                 |         |  |
| 1881 | 1,500          |                  |        |          |       |         |                                 |         |  |
| 1882 | 10,000         |                  |        |          |       |         |                                 |         |  |
| 1883 | 10,000         |                  |        |          |       |         |                                 |         |  |
| 1884 | 6,500          |                  |        |          |       |         |                                 |         |  |
| 1885 | 10,000         |                  |        |          |       |         |                                 |         |  |
| 1886 | 7,000          |                  |        |          |       |         |                                 |         |  |
| 1887 | 10,767         | \$5              |        |          |       |         |                                 |         |  |
| 1888 | 10,000         |                  |        |          |       |         |                                 |         |  |
| 1889 | 4,843          |                  |        |          |       |         |                                 |         |  |
| 1890 | 2,000          | 59               |        |          |       |         |                                 |         |  |
| 1891 | 1,728          | 17               |        |          |       |         |                                 |         |  |
| 1892 | 445            |                  |        |          |       |         |                                 |         |  |
| 1893 |                |                  |        |          |       |         |                                 |         |  |
| 1894 | 763            |                  |        |          |       |         |                                 |         |  |
| 1895 | 1,500          |                  |        |          |       |         |                                 |         |  |
| 1896 | 1,250          |                  |        |          |       |         |                                 |         |  |
| 1897 |                |                  |        |          |       |         |                                 |         |  |
| 1898 |                |                  |        |          |       |         |                                 |         |  |
| 1899 |                |                  |        |          |       |         |                                 |         |  |
| 1900 | 1              |                  |        |          |       |         |                                 |         |  |
| 1901 | 1              |                  | 79,071 | \$12,453 |       |         |                                 |         |  |
| 1902 |                |                  | 14,400 | 1,656    |       |         |                                 |         |  |
| 1903 | 1              |                  | 6,000  | 780      |       |         |                                 |         |  |
| 1904 | 1              |                  | 8,900  | 1,135    |       |         |                                 |         |  |
| 1905 | 1              |                  |        |          | 600   | \$3,500 |                                 |         |  |
| 1906 |                |                  |        |          | 650   | 6,000   |                                 |         |  |
| 1907 | 822            | 10               |        |          | 1,250 | 12,500  |                                 |         |  |
| 1908 | \$182,970      | \$1,196          | 694    | 70       | 700   | 6,300   | 965 lbs.                        | \$36    | Lead.  |
| 1909 | \$228,492      | \$572            |        |          | 700   | 6,300   |                                 | 18,264  | Unapportioned.                                       |
| 1910 | 1              | 1                |        |          | 700   | 6,300   |                                 | 64,764  | Miscellaneous stone.                                 |
| 1911 | 1              | 1                |        |          |       |         |                                 | 49,548  | Miscellaneous stone.                                 |
| 1912 | 1              | 1                |        |          |       |         |                                 | 45,000  | Miscellaneous stone.                                 |
| 1913 | \$2,255        | \$92             | 19,240 | 2,982    |       |         |                                 | 30,000  | Miscellaneous stone.                                 |
| 1914 | \$111,361      | \$340            |        |          |       |         |                                 |         |  |
| 1915 | 1              | 1                |        |          |       |         | 690 lbs.                        | 32      | Lead.  |
| 1916 | 1              | 1                |        |          |       |         | 90 tons                         | \$4,000 | Other minerals.                                      |
| 1917 | 1              | 1                |        |          |       |         |                                 | 720     | Magnetite.   |
| 1918 | 41,089         | 254              |        |          |       |         |                                 | 80,810  | Gold, platinum, silver.                              |
| 1919 | 1              | 1                |        |          |       |         |                                 | 70,500  | Miscellaneous stone.                                 |
| 1920 |                |                  |        |          |       |         |                                 | 76,616  | Gold, platinum, silver.                              |
| 1921 | 3,163          | 87               |        |          |       |         |                                 | 32,500  | Miscellaneous stone.                                 |
| 1922 | 1              | 1                |        |          |       |         |                                 | 1,006   | Other minerals.                                      |
| 1923 | 1              | 1                |        |          |       |         |                                 | 40,350  | Miscellaneous stone.                                 |
| 1924 | 355            | 1                |        |          |       |         |                                 | 24,800  | Miscellaneous stone.                                 |
| 1925 | 289            | 1                |        |          |       |         |                                 | 30,300  | Miscellaneous stone.                                 |
| 1926 |                |                  |        |          |       |         |                                 | 88,110  | Miscellaneous stone.                                 |
| 1927 |                |                  |        |          |       |         |                                 | 69,469  | Building tile, gold and silver.                      |
|      |                |                  |        |          |       |         |                                 | 134,036 | Miscellaneous stone.                                 |
|      |                |                  |        |          |       |         |                                 | 101,567 | Brick, building tile, gold and silver.               |
|      |                |                  |        |          |       |         |                                 | 14,262  | Miscellaneous stone.                                 |
|      |                |                  |        |          |       |         |                                 | 72,933  | Clay and clay products.                              |
|      |                |                  |        |          |       |         |                                 | 52      | Copper and lead.                                     |
|      |                |                  |        |          |       |         |                                 | 36,646  | Miscellaneous stone.                                 |
|      |                |                  |        |          |       |         |                                 | 43,326  | Clay and clay products.                              |
|      |                |                  |        |          |       |         |                                 | 156,486 | Miscellaneous stone.                                 |
|      |                |                  |        |          |       |         |                                 | 36,179  | Clay and clay products.                              |
|      |                |                  |        |          |       |         |                                 | 189,537 | Miscellaneous stone.                                 |
|      |                |                  |        |          |       |         |                                 | 177,336 | Brick, hollow building tile, cement, clay (pottery). |

## MINERAL PRODUCTION OF MERCED COUNTY, 1880-1934—Continued

| Year   | Gold,<br>value | Silver,<br>value | Copper  |          | Brick |          | Miscellaneous and unapportioned |             |                               |
|--------|----------------|------------------|---------|----------|-------|----------|---------------------------------|-------------|-------------------------------|
|        |                |                  | Pounds  | Value    | M     | Value    | Amount                          | Value       | Substance                     |
| 1928   | 310            | 2                |         |          |       | •        |                                 | 652,875     | Other minerals. <sup>4</sup>  |
| 1929   | 84,188         | 186              |         |          |       | •        |                                 | 1,026,124   | Other minerals. <sup>7</sup>  |
| 1930   | 88,328         | 146              |         |          |       | •        |                                 | 29,250      | Miscellaneous stone.          |
| 1931   | 173,551        | 226              |         |          |       |          |                                 | 684,176     | Other minerals. <sup>4</sup>  |
| 1932   | 391,017        | 525              |         |          |       |          |                                 | 534,012     | Other minerals. <sup>4</sup>  |
|        |                |                  |         |          |       |          |                                 | 22,500      | Miscellaneous stone.          |
| 1933   | 451,023        | 610              |         |          |       |          |                                 | 335,700     | Other minerals. <sup>4</sup>  |
|        |                |                  |         |          |       |          |                                 | 13,875      | Miscellaneous stone.          |
| 1934   | 598,695        | 1,051            |         |          |       |          |                                 | 300,506     | Other minerals. <sup>11</sup> |
|        |                |                  |         |          |       |          |                                 | 38,643      | Miscellaneous stone.          |
|        |                |                  |         |          |       |          |                                 | 412,103     | Cement, gypsum, platinum.     |
| Totals | \$2,453,719    | \$5,380          | 128,305 | \$19,076 | 4,600 | \$40,900 |                                 | \$5,828,959 |                               |

<sup>1</sup> Included with Stanislaus County production.<sup>2</sup> Includes Stanislaus County production.<sup>3</sup> See under 'Unapportioned'.<sup>4</sup> Dredge output included under Stanislaus County.<sup>5</sup> Includes brick and hollow building tile, cement, clay (pottery), miscellaneous stone.<sup>7</sup> Includes brick and hollow building tile, cement, miscellaneous stone.<sup>8</sup> Includes brick and hollow building tile, clay (pottery), lead.<sup>9</sup> Includes cement, copper, miscellaneous stone.<sup>10</sup> Includes cement, platinum, volcanic ash.<sup>11</sup> Includes cement, gypsum, platinum.

## MINERAL PRODUCTION OF MODOC COUNTY, 1880-1934

| Year   | Gold,<br>value | Silver,<br>value | Salt |         | Miscel-<br>laneous<br>stone <sup>1</sup> ,<br>value | Miscellaneous and unapportioned |          |   |
|--------|----------------|------------------|------|---------|---|---------------------------------|----------|---|
|        |                |                  | Tons | Value   |   | Amount                          | Value    | Substance                                       |
| 1880   | \$10,000       |                  |      |         |   |                                 |          |   |
| 1881   | 20,000         | \$1,500          |      |         |   |                                 |          |   |
| 1882   |                |                  |      |         |   |                                 |          |   |
| 1883   | 50,000         |                  |      |         |   |                                 |          |   |
| 1884   | 60,000         |                  |      |         |   |                                 |          |   |
| 1885   | 60,000         |                  |      |         |   |                                 |          |   |
| 1886   |                |                  |      |         |   |                                 |          |   |
| 1909   | •              |                  |      |         |   |                                 |          |   |
| 1910   | 5,438          | 75               |      |         |   |                                 |          |   |
| 1911   | 19,875         | 363              |      |         |   |                                 |          |   |
| 1912   | 27,893         | 494              | 50   | \$800   |   |                                 |          |   |
| 1913   | 6,061          | 94               | 40   | 720     |   |                                 |          |   |
| 1914   | 1,000          | 10               | 40   | 720     |   |                                 |          |   |
| 1915   | 7,557          | 104              | •    |         | \$300   |                                 | \$720    | Other minerals.                                 |
| 1916   | 2,729          | 90               | •    |         | 200   |                                 | 540      | Other minerals.                                 |
| 1917   |                |                  |      |         | 200   |                                 |          |   |
| 1918   | •              | •                | •    |         | 200   |                                 | 8,020    | Gold, salt, silver.                             |
| 1919   | 6,478          | 390              | •    |         | 550   |                                 | 1,802    | Other minerals.                                 |
| 1920   | •              | •                | •    |         | 700   |                                 | 3,968    | Gem material (Iceland Spar) gold, salt, silver. |
| 1921   |                |                  | •    |         | 34,930  |                                 | 1,720    | Gem material (Iceland Spar) and salt.           |
| 1922   |                |                  | •    |         | •   |                                 | 16,018   | Salt, miscellaneous stone.                      |
| 1923   | •              | •                | •    |         | 8,109   |                                 | 288      | Gold, silver.                                   |
| 1924   |                |                  | •    |         | •   |                                 | 1,300    | Salt, miscellaneous stone                       |
| 1925   |                |                  |      |         |   |                                 | 2,400    | Salt, miscellaneous stone.                      |
| 1926   | 158            | 3                |      |         | 36,450  |                                 | 1,380    | Other minerals.                                 |
| 1927   |                |                  |      |         | 61,651  |                                 | 600      | Other minerals.                                 |
| 1928   |                |                  |      |         | 29,440  |                                 | 1,000    | Other minerals.                                 |
| 1929   |                |                  |      |         | 30,346  |                                 | 650      | Other minerals.                                 |
| 1930   |                |                  | •    |         | •   |                                 | 16,250   | Miscellaneous stone and salt.                   |
| 1931   | 293            | 2                |      |         | 180,104   |                                 | 851      | Other minerals.                                 |
| 1932   | 2,082          | 29               | •    |         | 48,221  |                                 | 670      | Gems and salt.                                  |
| 1933   | 1,346          | 13               | •    |         | 164,614   |                                 | 774      | Other minerals.                                 |
| 1934   | 6,323          | 67               | •    |         | 41,150  |                                 | 577      | Other minerals.                                 |
| Totals | \$287,233      | \$3,234          | •130 | \$2,240 | \$637,165   |                                 | \$59,528 |   |

<sup>1</sup> Includes crushed rock, rubble, sand, gravel.<sup>2</sup> Included under Lassen County production.<sup>3</sup> See under 'Unapportioned'.

## MINERAL PRODUCTION OF MONO COUNTY, 1880-1934

| Year      | Gold,<br>value | Silver,<br>value | Lead    |         | Lime                          |          | Miscellaneous and unapportioned |         |   |
|-----------|----------------|------------------|---------|---------|-------------------------------|----------|---------------------------------|---------|---|
|           |                |                  | Pounds  | Value   | Barrels                       | Value    | Amount                          | Value   | Substance   |
| 1880..... | \$2,407,236    | \$582,905        | -----   | -----   | -----                         | -----    | -----                           | -----   | -----   |
| 1881..... | 3,385,000      | 300,000          | -----   | -----   | -----                         | -----    | -----                           | -----   | -----   |
| 1882..... | 2,200,000      | 380,000          | -----   | -----   | -----                         | -----    | -----                           | -----   | -----   |
| 1883..... | 1,750,000      | 290,000          | -----   | -----   | -----                         | -----    | -----                           | -----   | -----   |
| 1884..... | 1,000,000      | 285,000          | -----   | -----   | -----                         | -----    | -----                           | -----   | -----   |
| 1885..... | 482,860        | 91,849           | -----   | -----   | -----                         | -----    | -----                           | -----   | -----   |
| 1886..... | 439,558        | 163,502          | -----   | -----   | -----                         | -----    | -----                           | -----   | -----   |
| 1887..... | 382,498        | 118,945          | -----   | -----   | -----                         | -----    | -----                           | -----   | -----   |
| 1888..... | 297,000        | 75,000           | -----   | -----   | -----                         | -----    | -----                           | -----   | -----   |
| 1889..... | 193,264        | 86,827           | -----   | -----   | -----                         | -----    | -----                           | -----   | -----   |
| 1890..... | 144,180        | 52,293           | -----   | -----   | -----                         | -----    | -----                           | -----   | -----   |
| 1891..... | 302,415        | 18,983           | -----   | -----   | -----                         | -----    | -----                           | -----   | -----   |
| 1892..... | 396,296        | 271,058          | -----   | -----   | -----                         | -----    | -----                           | -----   | -----   |
| 1893..... | 293,637        | 11,401           | -----   | -----   | -----                         | -----    | -----                           | -----   | -----   |
| 1894..... | 358,824        | 11,549           | 50,000  | \$1,500 | -----                         | -----    | -----                           | -----   | -----   |
| 1895..... | 552,690        | 84,910           | 94,400  | 2,926   | -----                         | -----    | 800 cu. ft.                     | \$8,000 | Onyx.   |
| 1896..... | 451,553        | 82,283           | 73,500  | 2,205   | 500                           | \$2,000  | 3,000 cu. ft.                   | 24,000  | Onyx.   |
| 1897..... | 520,101        | 72,491           | 32,000  | 1,088   | 1,200                         | 4,800    | -----                           | -----   | -----   |
| 1898..... | 446,017        | 66,667           | 75,000  | 2,737   | 3,000                         | 4,000    | -----                           | -----   | -----   |
| 1899..... | 697,069        | 47,547           | 28,000  | 1,190   | 1,200                         | 3,750    | -----                           | -----   | -----   |
| 1900..... | 670,200        | 75,921           | 50,000  | 2,000   | 1,100                         | 4,000    | -----                           | -----   | -----   |
| 1901..... | 493,355        | 25,091           | 29,000  | 1,160   | 2,000                         | 3,000    | 1,938 lbs.                      | 305     | Copper.   |
| 1902..... | 510,596        | 36,548           | 4,400   | 154     | 2,000                         | 2,000    | -----                           | -----   | -----   |
| 1903..... | 334,713        | 20,067           | 1,000   | 36      | 1,818                         | 5,000    | 1,600 lbs.                      | 208     | Copper.   |
| 1904..... | 268,930        | 2,255            | -----   | -----   | 215                           | 850      | -----                           | -----   | -----   |
| 1905..... | 308,884        | 11,240           | -----   | -----   | -----                         | -----    | -----                           | -----   | -----   |
| 1906..... | 338,698        | 13,151           | -----   | -----   | -----                         | -----    | -----                           | -----   | -----   |
| 1907..... | 383,971        | 29,797           | -----   | -----   | -----                         | -----    | -----                           | -----   | -----   |
| 1908..... | 413,946        | 26,134           | -----   | -----   | -----                         | -----    | 7,100 gals.                     | 5,575   | Mineral water.  |
| 1909..... | 354,909        | 37,792           | -----   | -----   | -----                         | -----    | -----                           | 106,772 | Unapportioned,<br>1900-1909.  |
| 1910..... | 435,724        | 9,391            | -----   | -----   | -----                         | -----    | -----                           | -----   | -----   |
| 1911..... | 261,232        | 35,508           | 37,000  | 1,665   | -----                         | -----    | -----                           | -----   | -----   |
| 1912..... | 377,518        | 70,602           | 23,936  | 1,077   | 4,961                         | 3,721    | 8,179 lbs.                      | 1,350   | Copper.   |
| 1913..... | 147,271        | 33,263           | -----   | -----   | 2,135                         | 1,600    | 79,319 lbs.                     | 12,294  | Copper.   |
| 1914..... | 7,000          | 10,000           | -----   | -----   | -----                         | -----    | 1,000 lbs.                      | 150     | Salt.   |
| 1915..... | 107,302        | 1,923            | -----   | -----   | -----                         | -----    | -----                           | 200     | Other minerals.   |
| 1916..... | 237,084        | 3,606            | -----   | -----   | -----                         | -----    | -----                           | 300     | Other minerals.   |
| 1917..... | 209,040        | 5,662            | 1,912   | 164     | -----                         | -----    | -----                           | 3,906   | Copper, molybdenum<br>salt.   |
|           |                |                  | Totals. |         | 20,129                        | \$34,721 |                                 |         |   |
|           |                |                  |         |         | Miscellaneous<br>stone, value |          |                                 |         |   |
| 1918..... | 31,252         | 22,727           | 1,318   | 94      | -----                         | -----    | 160 lbs.                        | 40      | Copper.   |
| 1919..... | 29,428         | 55,558           | 1,556   | 82      | -----                         | -----    | 539 lbs.                        | 750     | Other minerals.   |
| 1920..... | 144,746        | 34,369           | 85,014  | 6,801   | -----                         | \$1,000  | 3,215 lbs.                      | 100     | Copper.   |
| 1921..... | 37,754         | 15,160           | 42,962  | 1,933   | -----                         | -----    | 2,940 lbs.                      | 592     | Copper.   |
| 1922..... | 65,747         | 11,686           | 9,820   | 540     | -----                         | -----    | 2,940 lbs.                      | 750     | Other minerals.   |
| 1923..... | 34,661         | 3,120            | -----   | -----   | -----                         | -----    | 4,338 lbs.                      | 379     | Copper.   |
| 1924..... | 49,651         | 6,472            | 32,458  | 2,597   | -----                         | 10,000   | -----                           | 1,650   | Onyx and salt.  |
| 1925..... | 5,503          | 1,590            | 22,488  | 1,957   | -----                         | 19,044   | -----                           | 586     | Copper.   |
| 1926..... | 20,204         | 121,404          | 20,906  | 1,672   | -----                         | 29,250   | -----                           | 8,304   | Other minerals.   |
| 1927..... | 3,686          | 21,822           | 4,830   | 304     | -----                         | -----    | 2,628                           | 45,010  | Other minerals.   |
| 1928..... | 6,307          | 176,115          | -----   | -----   | -----                         | -----    | -----                           | 48,927  | Other minerals.   |
| 1929..... | 10,025         | 28,137           | 19,602  | 1,235   | -----                         | 15,257   | 16,552 lbs.                     | 146,300 | Other minerals.   |
| 1930..... | 26,234         | 3,166            | -----   | -----   | -----                         | -----    | 2,006 lbs.                      | 368     | Copper.   |
| 1931..... | 125,342        | 5,372            | 137     | 5       | -----                         | 48,259   | -----                           | 66,200  | Other minerals.   |
| 1932..... | 26,333         | 5,292            | 33,401  | 1,002   | -----                         | 64,942   | 3,970 lbs.                      | 76,375  | Other minerals, clay,<br>copper, pumice,<br>salt, andalusite,<br>miscellaneous stone. |
|           |                |                  |         |         |                               |          | -----                           | 31,998  | Clay (pottery), pumice,<br>volcanic ash, salt, travertine.                            |
|           |                |                  |         |         |                               |          | -----                           | 2,913   | Copper.   |
|           |                |                  |         |         |                               |          | -----                           | 161,263 | Andalusite, clay (pottery), pumice, volcanic ash, salt.                               |
|           |                |                  |         |         |                               |          | -----                           | 216     | Copper.   |
|           |                |                  |         |         |                               |          | -----                           | 99,553  | Andalusite and pumice.  |
|           |                |                  |         |         |                               |          | -----                           | 23,945  | Pumice and salt.  |
|           |                |                  |         |         |                               |          | -----                           | 250     | Copper.   |
|           |                |                  |         |         |                               |          | -----                           | 37,861  | Andalusite and pumice.  |

## MINERAL PRODUCTION OF MONO COUNTY, 1880-1934—Continued

| Year      | Gold,<br>value | Silver,<br>value | Lead    |          | Lime    |           | Miscellaneous and unapportioned |              |  |
|-----------|----------------|------------------|---------|----------|---------|-----------|---------------------------------|--------------|--|
|           |                |                  | Pounds  | Value    | Barrels | Value     | Amount                          | Value        | Substance  |
| 1933----- | 33,378         | 1,004            | 5,537   | 170      | -----   | 20,354    | { 665 lbs.                      | 43<br>26,198 | Copper.<br>Andalusite and pum-<br>ice.<br>Copper.<br>Gems (rutile), molyb-<br>enum ore, pumice,<br>salt, andalusite. |
| 1934----- | 56,092         | 20,205           | 7,487   | 277      | -----   | 77,806    | { 510 lbs.                      | 41<br>58,017 |  |
| Totals..  | \$23,266,914   | \$4,065,031      | 787,664 | \$36,571 | -----   | \$305,682 | -----                           | \$1,027,501  |  |

<sup>1</sup> Includes crushed rock, rubble, rip-rap, sand, gravel.

## MINERAL PRODUCTION OF

| Year | Gold,<br>value | Silver,<br>value | Brick |         | Diatomaceous earth |       | Lime    |          | Limestone |         |
|------|----------------|------------------|-------|---------|--------------------|-------|---------|----------|-----------|---------|
|      |                |                  | M     | Value   | Tons               | Value | Barrels | Value    | Tons      | Value   |
| 1889 | \$3,500        |                  |       |         |                    |       |         |          |           |         |
| 1890 | 11,815         |                  |       |         |                    |       |         |          |           |         |
| 1891 |                |                  |       |         |                    |       |         |          |           |         |
| 1892 |                |                  |       |         |                    |       |         |          |           |         |
| 1893 |                |                  |       |         |                    |       |         |          |           |         |
| 1894 | 8,000          |                  |       |         |                    |       |         |          |           |         |
| 1895 |                |                  |       |         |                    |       |         |          |           |         |
| 1896 |                |                  |       |         |                    |       |         |          |           |         |
| 1897 |                |                  |       |         |                    |       |         |          | 2,000     | \$2,000 |
| 1898 |                |                  | 400   | \$2,400 |                    |       |         |          | 2,049     | 1,640   |
| 1899 |                |                  | 200   | 1,400   |                    |       |         |          | 7,744     | 6,970   |
| 1900 |                |                  | 200   | 1,600   |                    |       |         |          | 8,000     | 10,800  |
| 1901 | 13,800         |                  |       |         |                    |       |         |          | 5,463     | 7,500   |
| 1902 | 6,860          | \$18             |       |         |                    |       | 22,000  | \$13,200 |           |         |
| 1903 | 8,920          |                  |       |         |                    |       | 26,000  | 23,400   | 6,516     | 9,000   |
| 1904 | 6,941          |                  | 200   | 1,600   |                    |       | 3,240   | 3,240    | 4,550     | 21,500  |
| 1905 | 4,000          |                  |       |         |                    |       | 10,000  | 10,000   |           |         |
| 1906 | 625            | 3                |       |         | 80                 | \$400 | 40,000  | 50,000   |           |         |
| 1907 | 1,076          | 9                |       |         |                    |       | 100,000 | 125,000  |           |         |
| 1908 | 1,318          | 9                | 426   | 3,838   |                    |       | 50,000  | 50,000   |           |         |
| 1909 | 333            | 5                | 300   | 2,900   | 500                | 3,500 | 50,006  | 62,507   | 10,668    | 46,678  |
| 1910 | *1,013         | 10               | 993   | 9,957   | 500                | 3,500 | 30,894  | 29,349   | 2,500     | 7,500   |
| 1911 |                |                  |       |         | 850                | 5,950 |         |          | 2,000     | 6,000   |
| 1912 | *7,647         | 67               |       |         |                    |       |         |          | 6,000     | 8,000   |
| 1913 | 6,491          | 27               |       |         | 1,700              | 6,800 |         |          | 6,500     | 13,000  |
| 1914 | 4,000          | 20               |       |         |                    |       |         |          |           |         |
| 1915 |                |                  |       |         |                    |       |         |          |           |         |
| 1916 |                |                  |       |         |                    |       |         |          |           |         |
| 1917 |                |                  |       |         |                    |       |         |          |           |         |
| 1918 |                |                  |       |         |                    |       |         |          |           |         |
| 1919 |                |                  |       |         |                    |       |         |          |           |         |
| 1920 |                |                  |       |         |                    |       |         |          |           |         |
| 1921 |                |                  |       |         |                    |       |         |          |           |         |
| 1922 |                |                  |       |         |                    |       |         |          |           |         |
| 1923 |                |                  |       |         |                    |       |         |          |           |         |
| 1924 |                |                  |       |         |                    |       |         |          |           |         |
| 1925 | 998            | 3                |       |         |                    |       |         |          |           |         |
| 1926 | 706            | 3                |       |         |                    |       |         |          |           |         |
| 1927 | 500            | 2                |       |         |                    |       |         |          |           |         |



| Mineral water |         | Glass sand |          | Miscellaneous stone <sup>1</sup> , value | Miscellaneous and unapportioned |         |  |
|---------------|---------|------------|----------|--|---------------------------------|---------|--|
| Gallons       | Value   | Tons       | Value    |  | Amount                          | Value   | Substance                              |
|               |         |            |          |  |                                 |         |  |
|               |         |            |          |  |                                 |         |  |
|               |         |            |          |  |                                 |         |  |
|               |         |            |          | \$1,500                                  |                                 |         |  |
|               |         |            |          |  |                                 |         |  |
| 5,000         | \$1,000 |            |          |  |                                 |         |  |
| 2,000         | 200     |            |          |  |                                 |         |  |
| 21,000        | 1,050   |            |          | 14,025                                   |                                 |         |  |
| 1,500         | 750     |            |          | 8,258                                    |                                 |         |  |
| 20,000        | 4,000   |            |          | 2,775                                    |                                 |         |  |
| 15,000        | 3,250   | 4,500      | \$15,750 | 8,869                                    | 200 tons                        | \$1,000 | Coal.                                  |
| 15,000        | 1,750   | 4,500      | 12,225   | 5,200                                    |                                 |         |  |
| 55,000        | 1,250   | 5,989      | 4,967    | 3,167                                    | 61 tons                         | 732     | Asphaltum.                             |
| 25,000        | 1,000   | 8,295      | 7,272    |  | 124 tons                        | 1,488   | Asphaltum.                             |
| 5,000         | 1,000   | 9,257      | 8,127    |  |                                 |         |  |
| 24,000        | 12,000  | 750        | 1,125    |  |                                 |         |  |
| 120,000       | 12,000  | 11,065     | 8,178    |  | 4,800 tons                      | 24,000  | Coal.                                  |
|               |         | 6,805      | 5,120    | 31,727                                   | 7 flasks                        | 296     | Quicksilver.                           |
| 10,000        | 2,000   | 6,496      | 4,872    | 43,351                                   | 1 flask                         | 49      | Quicksilver.                           |
|               |         |            |          |  | 7 flasks                        | 344,789 | Unapportioned, 1900-1909.              |
|               |         |            |          |  | 317                             |         | Quicksilver.                           |
|               |         | 7,594      | 5,890    | 47,487                                   | 700 tons                        | 5,000   | Feldspar.                              |
|               |         |            |          |  | 200 tons                        | 2,500   | Fuller's earth.                        |
|               |         |            |          | 27,011                                   | 11,000 tons                     | 4,950   | Clay.                                  |
| 20,000        | 7,000   | 9,016      | 7,916    | 60,119                                   | 4,000 tons                      | 6,000   | Clay.                                  |
|               |         |            |          |  | 320 tons                        | 3,200   | Coal.                                  |
| 20,000        | 7,000   | 9,141      | 9,192    | 12,556                                   |                                 | 78,332  | Other minerals.                        |
|               |         |            |          |  | 35,000 tons                     | 12,000  | Clay.                                  |
|               |         |            |          |  | 300 tons                        | 2,700   | Fuller's earth.                        |
| 26,000        |         | 9,210      | 7,633    |  | 5,992 tons                      | 17,976  | Coal.                                  |
|               | 7,900   |            |          | 39,202                                   |                                 | 9,450   | Other minerals.                        |
|               |         |            |          |  | 700 tons                        | 3,500   | Feldspar.                              |
| 8,200         | 2,050   | "          |          | 32,799                                   | 450 tons                        | 3,150   | Fuller's earth.                        |
| 5,900         | 590     |            |          | 58,623                                   |                                 | 50,137  | Coal, feldspar, diatomaceous earth,    |
|               |         |            |          |  |                                 |         | quicksilver, silica.                   |
|               |         |            |          |  |                                 | 50,659  | Barytes, feldspar, diatomaceous earth, |
|               |         |            |          |  |                                 |         | quicksilver, salt, silica.             |
|               |         |            |          | 57,810                                   | { 6,392 tons                    | 23,468  | Dolomite.                              |
|               |         |            |          |  |                                 | 57,508  | Barytes, diatomaceous earth, lime-     |
|               |         |            |          |  |                                 |         | stone, mineral water, quicksilver,     |
|               |         |            |          |  |                                 |         | salt, silica.                          |
|               |         |            |          | 52,697                                   | { 4,900 tons                    | 25,950  | Dolomite.                              |
|               |         |            |          |  | 700 tons                        | 3,800   | Feldspar.                              |
|               |         |            |          |  |                                 | 37,240  | Barytes, coal, diatomaceous earth,     |
|               |         |            |          |  |                                 |         | quicksilver, salt, silica.             |
|               |         |            |          | 73,031                                   | { 8,280 tons                    | 29,120  | Dolomite.                              |
|               |         |            |          |  |                                 | 43,353  | Baryter, coal, feldspar, diatomaceous  |
|               |         |            |          |  |                                 |         | earth, salt, silica.                   |
| 200           | 20      | "          |          | *84,056                                  | { 5,755 tons                    | 26,238  | Dolomite.                              |
|               |         |            |          |  |                                 | 16,135  | Barytes, coal, feldspar, diatomaceous  |
|               |         |            |          |  |                                 |         | earth, salt, silica, (glass sand).     |
|               |         |            |          | *63,316                                  | { 2,500 tons                    | 8,750   | Dolomite.                              |
|               |         |            |          |  |                                 | 98,089  | Asbestos, coal, diatomaceous earth,    |
|               |         |            |          |  |                                 |         | mineral water, salt, glass sand.       |
| "             |         | "          |          | *86,180                                  |                                 | 169,139 | Asbestos, coal, dolomite, quick-       |
| "             |         | "          |          |  |                                 |         | silver, salt, glass sand.              |
|               |         |            |          | *140,724                                 |                                 | 81,298  | Asbestos, diatomaceous earth, dolo-    |
|               |         |            |          |  |                                 |         | mite, mineral water, quicksilver,      |
|               |         |            |          |  |                                 |         | salt, glass sand.                      |
| "             | "       |            |          | 239,847                                  | { 238 tons                      | 436     | Clay (pottery).                        |
|               |         |            |          |  | 1,240 tons                      | 4,960   | Dolomite.                              |
|               |         |            |          |  |                                 | 41,247  | Diatomaceous earth, mineral water,     |
|               |         |            |          |  |                                 |         | quicksilver, salt, shale, building     |
|               |         |            |          |  |                                 |         | stone, silica (glass sand).            |
|               |         |            |          | 409,423                                  | { 414 tons                      | 1,161   | Clay (pottery).                        |
|               |         |            |          |  |                                 | 66,136  | Diatomaceous ea.th, quicksilver, salt, |
|               |         |            |          |  |                                 |         | shale, building stone, silica (glass   |
|               |         |            |          |  |                                 |         | sand).                                 |
|               |         |            |          | 263,244                                  | { 491 tons                      | 1,164   | Clay (pottery).                        |
|               |         |            |          |  |                                 | 94,876  | Diatomaceous earth, dolomite, salt,    |
|               |         |            |          |  |                                 |         |  |

## MINERAL PRODUCTION OF

| Year        | Gold,<br>value | Silver,<br>value | Brick |          | Diatomaceous earth |          | Lime    |           | Limestone |           |
|-------------|----------------|------------------|-------|----------|--------------------|----------|---------|-----------|-----------|-----------|
|             |                |                  | M     | Value    | Tons               | Value    | Barrels | Value     | Tons      | Value     |
| 1928.....   |                |                  |       |          | 4                  |          |         |           |           |           |
| 1929.....   | 263            | 1                |       |          | 4                  |          |         |           |           |           |
| 1930.....   |                |                  |       |          | 4                  |          |         |           |           |           |
| 1931.....   | 148            | 1                |       |          | 4                  |          |         |           |           |           |
| 1932.....   | 794            | 1                |       |          | 4                  |          |         |           |           |           |
| 1933.....   | 195            |                  |       |          | 4                  |          |         |           |           |           |
| 1934.....   | 517            | 1                |       |          | 4                  |          |         |           |           |           |
| Totals..... | \$93,460       | \$179            | 2,719 | \$23,695 | 3,630              | \$20,150 | 332,140 | \$366,696 | 63,980    | \$139,588 |

<sup>1</sup> Includes crushed rock, rubble, sand, gravel.

<sup>2</sup> Includes Monterey, San Luis Obispo and Santa Cruz Counties.

<sup>3</sup> Includes Los Angeles and San Luis Obispo Counties.

<sup>4</sup> See under 'Unapportioned.'

<sup>5</sup> Includes molding, building, blast, filter, roofing sand.

## MONTEREY COUNTY, 1889-1934—Continued

| Mineral water |          | Glass sand |          | Miscellaneous stone, value | Miscellaneous and unapportioned |                     |   |
|---------------|----------|------------|----------|----------------------------|---------------------------------|---------------------|---|
| Gallons       | Value    | Tons       | Value    |                            | Amount                          | Value               | Substance   |
|               |          |            |          | \$210,489                  | 94,700 cu. ft.                  | \$22,200<br>118,971 | Sandstone (shale building stone).<br>Clay (pottery), diatomite, dolomite, salt.   |
|               |          | "          |          | 213,082                    |                                 | 11,900<br>129,612   | Sandstone (shale building stone).<br>Clay (pottery), diatomite, dolomite, glass sand, salt.                                       |
|               |          | "          |          | 233,971                    |                                 | 30,500<br>188,503   | Sandstone (shale building stone.)<br>Asbestos, clay (pottery), diatomite, dolomite, glass sand, paving blocks, quicksilver, salt. |
|               |          | "          |          | 155,098                    |                                 | 26,480<br>141,744   | Sandstone (shale building stone).<br>Clay (pottery), dolomite, glass sand, coal, silica.  |
|               |          | "          |          | 95,802                     |                                 | 10,560<br>59,140    | Sandstone (shale building stone).<br>Coal, diatomite, natural gas, glass sand, salt.  |
|               |          | "          |          | 64,107                     |                                 | 49,738              | Clay (pottery), coal, diatomite, glass sand, dolomite, natural gas, quicksilver.  |
|               |          | "          |          | 101,652                    |                                 | 88,732              | Clay (pottery), coal, diatomite, dolomite, natural gas, quicksilver, salt, sandstone, silica (glass sand).                        |
| *398,800      | \$65,810 | *92,618    | \$98,261 | \$3,185,782                |                                 | \$2,437,336         |   |

## MINERAL PRODUCTION OF

| Year                                | Quicksilver |           | Mineral water |          |
|-------------------------------------|-------------|-----------|---------------|----------|
|                                     | Flasks      | Value     | Gallons       | Value    |
| Manhattan Mine output, 1863 to 1876 | 3,594       | \$235,876 |               |          |
| 1862                                | 444         | 16,139    |               |          |
| 1863                                | 852         | 35,852    |               |          |
| 1864                                | 2,714       | 124,573   |               |          |
| 1865                                | 3,545       | 162,716   |               |          |
| 1866                                | 2,254       | 119,755   |               |          |
| 1867                                | 7,862       | 360,866   |               |          |
| 1868                                | 9,808       | 450,187   |               |          |
| 1869                                | 6,598       | 302,848   |               |          |
| 1870                                | 5,766       | 330,853   |               |          |
| 1871                                | 4,098       | 258,584   |               |          |
| 1872                                | 4,876       | 321,475   |               |          |
| 1873                                | 5,266       | 423,018   |               |          |
| 1874                                | 11,705      | 1,231,132 |               |          |
| 1875                                | 9,453       | 795,470   |               |          |
| 1876                                | 11,303      | 497,332   |               |          |
| 1877                                | 13,127      | 489,637   |               |          |
| 1878                                | 10,810      | 355,649   |               |          |
| 1879                                | 9,446       | 281,961   |               |          |
| 1880                                | 6,830       | 211,730   |               |          |
| 1881                                | 7,746       | 231,063   |               |          |
| 1882                                | 9,013       | 254,467   |               |          |
| 1883                                | 7,784       | 223,790   |               |          |
| 1884                                | 5,188       | 158,234   |               |          |
| 1885                                | 3,891       | 119,648   |               |          |
| 1886                                | 5,656       | 200,788   |               |          |
| 1887                                | 6,247       | 264,717   |               |          |
| 1888                                | 5,150       | 218,875   |               |          |
| 1889                                | 5,402       | 243,090   |               |          |
| 1890                                | 3,934       | 206,535   |               |          |
| 1891                                | 4,896       | 221,544   |               |          |
| 1892                                | 8,612       | 350,595   |               |          |
| 1893                                | 11,505      | 422,809   |               |          |
| 1894                                | 9,705       | 298,016   | 97,275        | \$41,231 |
| 1895                                | 9,318       | 372,500   | 199,397       | 99,700   |
| 1896                                | 11,411      | 403,031   | 218,680       | 81,335   |
| 1897                                | 12,281      | 459,753   | 159,896       | 81,948   |
| 1898                                | 12,368      | 472,972   | 169,261       | 63,919   |
| 1899                                | 11,696      | 598,322   | 171,567       | 85,964   |
| 1900                                | 8,724       | 403,500   | 171,000       | 72,200   |
| 1901                                | 7,798       | 388,176   | 158,830       | 109,900  |
| 1902                                | 7,142       | 304,474   | 236,229       | 97,048   |
| 1903                                | 7,859       | 333,006   | 244,400       | 124,000  |
| 1904                                | 5,328       | 199,586   | 386,000       | 104,750  |
| 1905                                | 4,853       | 171,910   | 279,400       | 89,500   |
| 1906                                | 2,380       | 86,870    | 84,000        | 90,500   |
| 1907                                | 2,500       | 95,400    | 240,000       | 103,600  |
| 1908                                | 2,340       | 98,912    | 145,500       | 101,040  |
| 1909                                | 1,625       | 80,535    | 123,072       | 96,279   |
| 1910                                | 646         | 29,231    | 152,772       | 92,960   |
| 1911                                | 140         | 6,441     | 141,540       | 86,530   |
| 1912                                | 287         | 12,065    | 136,750       | 81,997   |
| 1913                                | 287         | 11,546    | 151,520       | 75,548   |
| 1914                                | 240         | 11,772    | 142,940       | 73,280   |
| 1915                                | 507         | 45,224    | 133,387       | 73,535   |
| 1916                                | 1,150       | 107,525   | 152,764       | 93,370   |
| 1917                                | 834         | 78,320    | 126,124       | 70,058   |
| 1918                                | 1,297       | 143,850   | 92,512        | 59,620   |
| 1919                                | 644         | 58,140    | 76,860        | 60,395   |
| 1920                                | 266         | 18,588    | 80,431        | 38,621   |
| 1921                                | 35          | 1,659     | 72,364        | 55,760   |
| 1922                                | 189         | 5,143     | 80,481        | 54,341   |
| 1923                                | 157         | 9,759     | 69,639        | 55,757   |
| 1924                                |             |           | 73,608        | 53,391   |
| 1925                                |             |           | 63,836        | 44,251   |
| 1926                                |             |           | 80,376        | 49,468   |
| 1927                                | 776         | 88,425    | 81,864        | 50,116   |



## MINERAL PRODUCTION OF

| Year        | Quicksilver |              | Mineral water |             |
|-------------|-------------|--------------|---------------|-------------|
|             | Flasks      | Value        | Gallons       | Value       |
| 1928.....   | 781         | \$85,477     | 70,291        | \$32,707    |
| 1929.....   | 2,081       | 246,747      | 86,141        | 90,703      |
| 1930.....   | 2,000       | 213,840      | 43,902        | 13,837      |
| 1931.....   | 1,937       | 168,710      | 106,062       | 49,665      |
| 1932.....   | 647         | 34,634       | 33,011        | 12,293      |
| 1933.....   | 842         | 47,059       | 15,237        | 9,940       |
| 1934.....   | 1,706       | 120,372      | 47,900        | 13,900      |
| Totals..... | 350,152     | \$16,432,296 | 5,396,819     | \$2,835,007 |

<sup>1</sup> Includes crushed rock, macadam, rubble, paving blocks, sand, gravel.

<sup>2</sup> Napa Soda Springs have been bottling water for sale since 1860; but no segregated figures available for Napa County previous to 1894.

<sup>3</sup> Flasks of 76½ pounds to June, 1904; of 75 pounds thence, through 1927; of 76 pounds since January, 1928.

<sup>4</sup> See under 'Unapportioned.'

## NAPA COUNTY, 1882-1934—Continued

| Magnesite |           | Miscellaneous<br>stone, <sup>1</sup><br>value | Miscellaneous and unapportioned |              |   |
|-----------|-----------|---|---------------------------------|--------------|---|
| Tons      | Value     |   | Amount                          | Value        | Substance                                   |
|           |           | \$179,078                                     | 4,356 lbs.                      | \$9,000      | Other minerals.                             |
|           |           |   |                                 | 767          | Copper.                                     |
|           |           |   |                                 | 17,781       | Gold.                                       |
|           |           | 216,420                                       | 144,180 fine oz.                | 76,848       | Silver.                                     |
|           |           |   |                                 | 556          | Other minerals.                             |
|           |           |   | 9,257 lbs.                      | 1,203        | Copper.                                     |
|           |           |   |                                 | 36,532       | Gold.                                       |
|           |           |   | 464 lbs.                        | 23           | Lead.                                       |
|           |           |   | 266,386 fine oz.                | 102,559      | Silver.                                     |
|           |           |   |                                 | 164,989      | Miscellaneous stone and sandstone.          |
|           |           |   | 1,945 lbs.                      | 177          | Copper.                                     |
|           |           | 145,920                                       |                                 | 14,766       | Gold.                                       |
|           |           |   | 60,009 fine oz.                 | 17,403       | Silver.                                     |
|           |           |   |                                 | 200          | Other minerals.                             |
|           |           | 115,982                                       |                                 | 6,724        | Asbestos, pumice, sandstone.                |
|           |           | 142,143                                       |                                 | 10,400       | Pumice and sandstone.                       |
|           |           | 256,982                                       |                                 | 6,960        | Asbestos, pumice, paving blocks, sandstone. |
| 4107,801  | \$981,186 | \$4,001,999                                   |                                 | \$11,804,804 |   |

## MINERAL PRODUCTION OF

| Year   | Copper   |           | Gold,<br>value | Granite       |          |
|--------|----------|-----------|----------------|---------------|----------|
|        | Pounds   | Value     |                | Cubic<br>feet | Value    |
| 1880   |          |           | \$2,702,362    |               |          |
| 1881   |          |           | 3,700,000      |               |          |
| 1882   |          |           | 3,500,000      |               |          |
| 1883   |          |           | 3,000,000      |               |          |
| 1884   |          |           | 2,950,000      |               |          |
| 1885   |          |           | 2,577,873      |               |          |
| 1886   |          |           | 3,221,038      |               |          |
| 1887   |          |           | 2,719,574      |               |          |
| 1888   |          |           | 2,600,000      |               |          |
| 1889   |          |           | 2,249,335      |               |          |
| 1890   |          |           | 1,969,613      |               |          |
| 1891   |          |           | 2,207,886      |               |          |
| 1892   |          |           | 1,945,406      |               |          |
| 1893   |          |           | 2,067,203      |               |          |
| 1894   | 83,728   | \$7,535   | 1,830,155      |               |          |
| 1895   | 33,255   | 3,325     | 1,789,816      |               |          |
| 1896   | 28,200   | 2,820     | 2,380,756      |               |          |
| 1897   |          |           | 1,885,251      | 1,100         | \$2,200  |
| 1898   | 30,000   | 3,000     | 2,017,628      | 2,000         | 1,500    |
| 1899   | 43,438   | 7,084     | 2,171,510      | 2,000         | 1,500    |
| 1900   | 150,980  | 20,472    | 1,812,036      |               |          |
| 1901   | 39,588   | 6,235     | 2,121,054      |               |          |
| 1902   | 26,500   | 3,975     | 2,142,740      | 1,000         | 3,000    |
| 1903   | 4,500    | 585       | 2,458,047      | 2,170         | 4,160    |
| 1904   |          |           | 3,130,304      | 2,335         | 5,395    |
| 1905   |          |           | 3,179,715      | 2,155         | 2,570    |
| 1906   |          |           | 2,658,420      | 9,525         | 9,300    |
| 1907   | 22,082   | 4,418     | 2,162,083      | 12,840        | 9,300    |
| 1908   | 30,166   | 4,104     | 2,297,963      | 700           | 2,100    |
| 1909   |          |           | 2,660,235      | 1,250         | 2,800    |
| 1910   |          |           | 2,533,483      | 2,225         | 3,215    |
| 1911   | 1,665    | 209       | 2,199,147      | 1,250         | 3,500    |
| 1912   |          |           | 2,081,958      |               |          |
| 1913   |          |           | 2,918,733      |               |          |
| 1914   | 39       | 5         | 3,301,948      |               |          |
| 1915   | 1,817    | 318       | 3,466,722      |               |          |
| 1916   | 3,487    | 858       | 3,669,878      | 100           | 100      |
| 1917   | 40,165   | 10,965    | 3,682,947      |               |          |
| 1918   | 42,203   | 10,424    | 3,070,453      |               |          |
| 1919   | *        |           | 2,981,212      | *             |          |
| 1920   | *        |           | 2,872,471      | *             |          |
| 1921   | *        |           | 2,570,162      | *             |          |
| 1922   | *        |           | 2,903,573      | *             |          |
| 1923   | *        |           | 2,282,155      | *             |          |
| 1924   | *        |           | 2,820,032      | *             |          |
| 1925   | *        |           | 2,305,607      | *             |          |
| 1926   | *        |           | 2,318,846      | *             |          |
| 1927   | *        |           | 2,127,195      | *             |          |
| 1928   | *        |           | 1,994,002      | *             |          |
| 1929   | 5,702    | 1,004     | 1,807,613      | *             |          |
| 1930   | 17,009   | 2,211     | 2,193,486      |               |          |
| 1931   | 143,984  | 13,103    | 3,304,815      |               |          |
| 1932   | 33,454   | 2,108     | 3,640,797      |               |          |
| 1933   | 67,179   | 4,299     | 4,676,357      |               |          |
| 1934   | 113,771  | 9,101     | 7,118,551      | *             |          |
| Totals | 2962,912 | \$118,158 | \$148,950,246  | 240,650       | \$50,640 |

\* Includes crushed rock, rubble, sand, gravel.

\* See under 'Unapportioned.'



## NEVADA COUNTY, 1880-1934

| Lead      |          | Silver,<br>value | Miscel-<br>laneous<br>stone <sup>1</sup> ,<br>value | Miscellaneous and unapportioned |             |   |
|-----------|----------|------------------|---|---------------------------------|-------------|---|
| Pounds    | Value    |                  |   | Amount,<br>(tons)               | Value       | Substance   |
|           |          | \$70,144         |   |                                 |             |   |
|           |          | 9,500            |   |                                 |             |   |
|           |          | 10,000           |   |                                 |             |   |
|           |          | 8,000            |   |                                 |             |   |
|           |          | 5,000            |   |                                 |             |   |
|           |          | 4,835            |   |                                 |             |   |
|           |          | 8,333            |   |                                 |             |   |
|           |          | 2,477            |   |                                 |             |   |
|           |          | 5,000            |   |                                 |             |   |
|           |          | 5,633            |   |                                 |             |   |
|           |          | 14,713           |   |                                 |             |   |
|           |          | 14,184           |   |                                 |             |   |
|           |          | 8,326            |   |                                 |             |   |
|           |          | 1,229            |   |                                 |             |   |
|           |          | 476              |   | 290                             | \$5,800     | Mineral paint.  |
|           |          | 400              |   | 150                             | 2,250       | Mineral paint.  |
|           |          | 8,584            |   |                                 |             |   |
|           |          | 8,116            |   |                                 |             |   |
|           |          | 19,476           |   | 50                              | 1,000       | Mineral paint.  |
|           |          |                  |   | 6,000                           | 30,000      | Pyrite.   |
|           |          | 17,784           |   | 300                             | 5,400       | Mineral paint.  |
|           |          |                  |   | 5,400                           | 28,620      | Pyrite.   |
|           |          | 66,841           |   | 2,925                           | 17,550      | Pyrite.   |
|           |          | 18,122           |   | 78                              | 429         | Pyrite.   |
|           |          | 6,124            |   |                                 |             |   |
|           |          | 3,252            |   |                                 |             |   |
|           |          | 9,555            |   |                                 |             |   |
|           |          | 32,523           |   |                                 | 20          | Platinum.   |
|           |          | 24,219           |   |                                 |             |   |
|           |          | 17,505           |   |                                 |             |   |
| 663       | \$25     | 21,914           | \$1,678   |                                 |             |   |
|           |          | 24,926           | 1,874   |                                 | 400,000     | Unapportioned, 1900-1909.   |
|           |          | 16,506           |   |                                 |             |   |
| 14,831    | 667      | 15,691           |   |                                 |             |   |
| 1,785     | 80       | 22,830           |   |                                 |             |   |
| 2,090     | 92       | 26,542           | 5,000   |                                 |             |   |
| 145       | 6        | 27,000           | 2,108   |                                 | 60          | Gems.   |
| 1,567     | 74       | 23,762           | 3,675   |                                 | 1,950       | Other minerals.   |
| 1,036     | 71       | 35,741           | 1,225   | 981                             | 12,795      | Chromite.   |
|           |          | 52,335           | 1,600   | 1,962                           | 23,475      | Manganese, platinum, tungsten.                                    |
|           |          |                  |   |                                 | 43,449      | Chromite.   |
|           |          |                  |   |                                 | 47,101      | Asbestos, lead, platinum, tungsten con-<br>centrates.             |
|           |          |                  |   | 3,328                           | 116,993     | Chromite.   |
|           |          | 72,557           | 1,400   |                                 | 29,884      | Asbestos, lead, manganese, platinum,<br>tungsten concentrates.    |
|           |          | 68,731           | 1,976   |                                 | 12,034      | Asbestos, barytes, chromite, copper,<br>granite, lead, platinum.  |
|           |          | 58,476           | 6,528   |                                 | 17,531      | Asbestos, barytes, copper, granite, lead.                         |
|           |          | 33,906           | 19,151  |                                 | 17,862      | Asbestos, barytes, granite.                                       |
|           |          | 19,583           | 27,982  |                                 | 14,867      | Barytes, copper, granite, lead, mineral<br>paint.                 |
| 1,290     | 90       | 30,534           | 42,309  |                                 | 15,682      | Asbestos, barytes, copper, granite, min-<br>eral paint, platinum. |
|           |          | 39,252           | 82,200  |                                 | 3,783       | Copper, granite, lead.  |
|           |          | 32,155           | 10,333  |                                 | 4,782       | Chromite, copper, granite, lead.                                  |
| 4,301     | 344      | 30,015           | 850,000   |                                 | 41,006      | Barytes, copper, granite.   |
|           |          | 27,581           | 15,000  |                                 | 43,933      | Barytes, copper, granite, lead.                                   |
|           |          | 20,798           | 4,000   |                                 | 5,086       | Copper, granite, lead.  |
| 6,603     | 416      | 21,861           | 83,770  |                                 | 65,364      | Baryte and granite.   |
| 18,164    | 908      | 23,316           | 76,850  |                                 | 23,462      | Baryte and platinum.  |
| 198,671   | 7,351    | 43,611           | 123,024   | 149,865 lbs.                    | 5,314       | Zinc.   |
| 82,119    | 2,464    | 29,868           | 24,866  |                                 | 4,000       | Other minerals.   |
| 72,380    | 2,678    | 56,109           | 24,400  | 34,478 lbs.                     | 1,448       | Zinc.   |
| 130,301   | 4,821    | 203,190          | 151,032   |                                 | 2,100       | Other minerals.   |
|           |          |                  |   |                                 | 2,300       | Other minerals.   |
| \$536,006 | \$20,087 | \$1,479,141      | \$1,561,981   |                                 | \$1,473,270 |   |

MINERAL PRODUCTION OF

| Year        | Petroleum   |               | Natural gas,<br>value | Brick           |           |
|-------------|-------------|---------------|-----------------------|-----------------|-----------|
|             | Barrels     | Value         |                       | M               | Value     |
| 1889.....   |             |               |                       |                 |           |
| 1890.....   |             |               |                       |                 |           |
| 1892.....   |             |               |                       |                 |           |
| 1894.....   |             |               |                       |                 |           |
| 1895.....   |             |               |                       |                 |           |
| 1897.....   | 12,000      | \$12,000      |                       |                 |           |
| 1898.....   | 60,000      | 60,000        |                       | 300             | \$2,400   |
| 1899.....   | 108,077     | 108,077       |                       | 200             | 1,600     |
| 1900.....   | 254,397     | 254,397       |                       |                 |           |
| 1901.....   | 302,652     | 181,591       |                       |                 |           |
| 1902.....   | 1,103,793   | 824,492       |                       |                 |           |
| 1903.....   | 1,355,104   | 1,016,285     |                       | 1,634           | 13,000    |
| 1904.....   | 1,470,000   | 1,144,542     |                       | 1,500           | 9,000     |
| 1905.....   | 1,510,900   | 711,633       |                       | 118             | 11,800    |
| 1906.....   | 2,388,000   | 1,194,000     |                       | 1,365           | 13,500    |
| 1907.....   | 2,426,750   | 1,456,050     |                       | 3,176           | 26,000    |
| 1908.....   | 3,376,689   | 2,532,517     |                       | 4,050           | 20,450    |
| 1909.....   | 4,270,967   | 2,690,709     |                       | 4,090           | 20,650    |
| 1910.....   | 5,044,001   | 3,177,721     |                       | 2,950           | 31,000    |
| 1911.....   | 6,345,275   | 4,097,980     |                       | 1,650           | 11,550    |
| 1912.....   | 6,704,421   | 4,478,553     | \$5,250               | 1,300           | 9,100     |
| 1913.....   | 9,485,362   | 6,867,402     | 9,612                 | 2,100           | 14,000    |
| 1914.....   | 12,758,678  | 8,612,108     | 112,040               | 1,333           | 19,300    |
| 1915.....   | 12,715,457  | 6,510,314     | 81,753                | 1,280           | 16,000    |
| 1916.....   | 13,198,591  | 8,750,666     | 139,281               | 1,186           | 8,300     |
| 1917.....   | 14,680,801  | 14,724,843    | 490,511               | and tile<br>477 | 11,000    |
| 1918.....   | 15,730,462  | 22,211,412    | 693,169               |                 | 3,869     |
| 1919.....   | 14,458,722  | 26,893,223    | 837,439               | "               |           |
| 1920.....   | 15,462,741  | 33,059,340    | 862,446               | "               |           |
| 1921.....   | 22,929,466  | 45,996,509    | 1,312,704             | 2,994           | 47,720    |
| 1922.....   | 31,049,491  | 36,483,162    | 2,096,629             | 4,706           | 73,106    |
| 1923.....   | 46,474,921  | 40,897,930    | 3,914,661             | 8,499           | 103,428   |
| 1924.....   | 31,661,283  | 37,455,298    | 2,397,813             | "               |           |
| 1925.....   | 32,734,420  | 46,384,673    | 2,324,014             | 3,253           | 39,445    |
| 1926.....   | 37,989,349  | 59,225,395    | 3,556,194             | 6,272           | 72,489    |
| 1927.....   | 46,593,842  | 56,238,767    | 3,910,501             | 1,283           | 13,143    |
| 1928.....   | 37,100,943  | 34,607,932    | 4,695,769             | "               |           |
| 1929.....   | 25,861,815  | 25,504,922    | 2,602,382             | 774             | 7,743     |
| 1930.....   | 23,113,820  | 24,500,649    | 1,394,600             | "               |           |
| 1931.....   | 17,524,067  | 13,231,012    | 1,494,855             | "               |           |
| 1932.....   | 16,981,368  | 12,939,802    | 1,095,752             | "               |           |
| 1933.....   | 22,046,475  | 18,239,049    | 912,317               | "               |           |
| 1934.....   | 25,891,732  | 24,258,123    | 1,366,560             | "               |           |
| Totals..... | 563,176,832 | \$627,533,078 | \$36,297,252          | \$56,490        | \$599,593 |

<sup>1</sup> Includes crushed rock, rubble, rip-rap, sand, gravel.  
<sup>2</sup> See under 'Unapportioned.'

## ORANGE COUNTY, 1889-1934

| Clay      |           | Stone<br>industry, <sup>1</sup><br>value | Miscellaneous minerals |           |  |
|-----------|-----------|--|------------------------|-----------|--|
| Tons      | Value     |  | Amount                 | Value     | Kind   |
|           |           |  |                        | \$6,262   | Gold.  |
|           |           |  |                        | 10,943    | Gold.  |
|           |           |  |                        | 9,470     | Gold.  |
|           |           |  | 1,500 tons             | 6,000     | Coal.  |
|           |           |  | 900 tons               | 4,000     | Coal.  |
|           |           |  |                        | 144       | Gold.  |
|           |           |  | 800 tons               | 3,200     | Coal.  |
|           |           |  | 600 tons               | 2,400     | Coal.  |
|           |           |  | 25 tons                | 250       | Gypsum.  |
|           |           |  | 240 cu. ft.            | 120       | Sandstone.                                     |
|           |           |  |                        | 2,407     | Gold.  |
|           |           |  | 500 tons               | 2,250     | Coal.  |
|           |           |  | 300 tons               | 1,500     | Coal.  |
|           |           |  |                        | 4,000     | Gold.  |
|           |           |  |                        | 250       | Gold.  |
|           |           |  |                        | 150       | Gold.  |
|           |           |  | 408 cu. ft.            | 200       | Sandstone.                                     |
| 10,500    | \$14,581  |  | 500 cu. ft.            | 250       | Sandstone.                                     |
| 7,740     | 12,900    |  |                        |           |  |
|           |           |  | 964 lbs.               | 193       | Copper.  |
|           |           |  | 24,472 lbs.            | 1,303     | Lead.  |
|           |           |  | 33,546 lbs.            | 2,000     | Zinc.  |
|           |           |  | 14,405 lbs.            | 534       | Lead.  |
|           |           |  |                        | 72,586    | Unapportioned 1900-1909.                       |
| 9,000     | 18,600    | \$3,005                                  |                        |           |  |
| 2,617     | 26,170    | 23,065                                   |                        |           |  |
| 500       | 5,000     | 6,443                                    |                        |           |  |
| 2,000     | 3,200     | 855                                      |                        |           |  |
| 2,100     | 3,400     | 21,248                                   |                        |           |  |
| 15,500    | 20,666    | 30,815                                   | 459 tons               | 688       | Glass sand.                                    |
|           |           | 88,315                                   |                        |           |  |
|           |           | 9,027                                    | 364 lbs.               | 17        | Lead.  |
|           |           |  | 4 lbs.                 | 1         | Copper.  |
|           |           | 3,773                                    |                        | 3,066     | Other minerals.                                |
|           |           | 2,699                                    |                        | 2,573     | Pottery clay, copper, lead.                    |
| 3,649     | 4,650     | 1,560                                    |                        |           |  |
|           |           | 1,944                                    |                        |           |  |
|           |           |  |                        | 18,499    | Clay and clay products.                        |
|           |           |  |                        | 97,632    | Lead and potash.                               |
|           |           |  | 455 lbs.               | 84        | Copper.  |
|           |           |  |                        | 145       | Gold.  |
|           |           | 80,988                                   | 15,932 lbs.            | 1,275     | Lead.  |
|           |           |  |                        | 7,263     | Silver.  |
|           |           |  |                        | 96,595    | Brick, clay, potash.                           |
|           |           | 131,301                                  |                        | 10,796    | Pottery clay, copper, gold, lead and silver.   |
|           |           | 270,022                                  |                        | 3,168     | Clay (pottery), gold, lead and silver.         |
|           |           |  |                        | 16,203    | Clay (pottery), copper, gold, lead and silver. |
|           |           | 536,767                                  |                        | 121,260   | Brick and clay.                                |
|           |           |  |                        | 907       | Copper, lead, silver.                          |
|           |           | 505,932                                  |                        | 52        | Gold.  |
|           |           |  |                        | 995       | Silver.  |
| 13,431    | 42,562    | 307,112                                  |                        | 5,637     | Copper, lead, zinc.                            |
| 13,150    | 38,989    | 317,767                                  |                        | 60        | Gold.  |
|           |           |  |                        | 414       | Lead.  |
|           |           |  |                        | 967       | Silver.  |
| 14,637    | 49,354    | 325,676                                  |                        | 10,807    | Copper, potash, zinc.                          |
| 98,392    | 87,245    | 244,634                                  |                        | 9,600     | Barite, quicksilver.                           |
|           |           |  |                        | 19,597    | Brick and quicksilver.                         |
|           |           |  |                        | 29        | Gold.  |
|           |           |  | 1,471 lbs.             | 93        | Lead.  |
| 30,147    | 111,349   | 263,250                                  | 839 fine oz.           | 447       | Silver.  |
|           |           |  |                        | 1,280     | Copper and quicksilver.                        |
| 18,224    | 78,366    | 252,501                                  |                        | 109,174   | Brick and mineral water.                       |
| 21,900    | 28,430    | 275,367                                  |                        | 105,494   | Brick and mineral water.                       |
| 9,892     | 33,217    | 87,592                                   |                        | 25,882    | Brick, mineral water, quicksilver.             |
|           |           |  |                        | 105       | Gold.  |
| 13,486    | 49,762    | 46,340                                   | 2 fine oz.             | 1         | Silver.  |
|           |           |  |                        | 16,007    | Brick, mineral water, glass sand, quicksilver. |
|           |           |  |                        | 572       | Gold.  |
| 12,740    | 31,328    | 78,986                                   | 2 fine oz.             | 1         | Silver.  |
|           |           |  |                        | 10,461    | Brick and mineral water.                       |
| \$299,605 | \$678,258 | \$3,923,584                              |                        | \$809,760 |  |

## MINERAL PRODUCTION OF

| Year      | Gold,<br>value | Silver,<br>value | Copper    |         | Brick    |          | Pottery clay† |          |
|-----------|----------------|------------------|-----------|---------|----------|----------|---------------|----------|
|           |                |                  | Pounds    | Value   | M        | Value    | Tons          | Value    |
| 1880..... | \$438,133      | \$640            |           |         |          |          |               |          |
| 1881..... | 850,000        | 6,500            |           |         |          |          |               |          |
| 1882..... | 800,000        |                  |           |         |          |          |               |          |
| 1883..... | 810,000        |                  |           |         |          |          |               |          |
| 1884..... | 887,320        | 5                |           |         |          |          |               |          |
| 1885..... | 906,301        |                  |           |         |          |          |               |          |
| 1886..... | 1,071,663      | 1,397            |           |         |          |          |               |          |
| 1887..... | 855,510        | 556              |           |         |          |          |               |          |
| 1888..... | 850,000        | 1,000            |           |         |          |          |               |          |
| 1889..... | 1,245,491      | 1,975            |           |         |          |          |               |          |
| 1890..... | 1,003,602      | 1,045            |           |         |          |          |               |          |
| 1891..... | 998,495        | 5,921            |           |         |          |          |               |          |
| 1892..... | 1,159,080      | 2,120            |           |         |          |          |               |          |
| 1893..... | 1,351,260      | 616              |           |         |          |          |               |          |
| 1894..... | 1,851,215      | 664              |           |         |          |          | 22,000        | \$27,500 |
| 1895..... | 1,599,635      | 5,273            |           |         |          |          | 15,000        | 15,000   |
| 1896..... | 1,674,844      | 6,690            |           |         |          |          | 10,000        | 10,000   |
| 1897..... | 1,524,941      | 6,784            |           |         |          |          | 7,500         | 7,500    |
| 1898..... | 1,488,022      | 5,670            |           |         |          |          | 12,000        | 12,000   |
| 1899..... | 1,100,081      | 1,206            |           |         |          |          | 15,000        | 15,000   |
| 1900..... | 986,155        | 12,058           |           |         |          |          | 15,000        | 15,000   |
| 1901..... | 900,745        | 4,828            | 11,200    | \$1,764 |          |          | 15,000        | 15,000   |
| 1902..... | 843,366        | 3,341            | 3,200     | 368     |          |          | 15,000        | 15,000   |
| 1903..... | 570,571        | 1,116            | 4,000     | 520     |          |          | 15,000        | 15,000   |
| 1904..... | 778,355        | 9,320            | 600,000   | 76,500  |          |          | 16,100        | 16,100   |
| 1905..... | 597,793        | 8,041            | 367,250   | 57,291  |          |          | 20,000        | 10,000   |
| 1906..... | *              | *                | 200,000   | 38,600  |          |          | 20,000        | 15,000   |
| 1907..... | 482,772        | 3,338            |           |         |          |          | 20,000        | 20,000   |
| 1908..... | 358,096        | 2,194            |           |         | 13,000   | \$46,300 | 13,000        | 11,500   |
| 1909..... | 281,372        | 1,492            |           |         | 2,083    | 52,300   | 45,300        | 35,250   |
| 1910..... | 257,191        | 1,157            |           |         | 600      | 23,438   | 44,000        | 27,000   |
| 1911..... | 251,298        | 2,585            | 118,624   | 14,828  | 700      | 18,000   | 43,120        | 29,200   |
| 1912..... | 367,383        | 4,791            | 78,170    | 12,898  | 900      | 21,250   | 56,000        | 41,300   |
| 1913..... | 220,785        | 2,972            | 429       | 67      | 1,900    | 40,000   | 63,600        | 47,200   |
| 1914..... | 600,000        | 4,500            | 453       | 60      | 2,000    | 40,000   | 63,700        | 49,000   |
| 1915..... | 414,319        | 24,543           | *         |         | 2,000    | 40,000   | 49,126        | 37,536   |
| 1916..... | 428,400        | 24,928           | 1,437,441 | 353,610 | 2,540    | 79,000   | 29,018        | 36,230   |
| 1917..... | 538,686        | 13,885           | 710,601   | 193,994 | *        |          | 44,097        | 44,097   |
| 1918..... | 230,190        | 22,432           | 837,527   | 206,869 | and tile | 81,408   | 29,348        | 29,348   |
| 1919..... | 170,609        | 3,141            |           |         | *        |          | *             |          |
| 1920..... | 151,088        | 2,178            |           |         | and tile | 149,924  | 65,560        | 76,500   |

† Figures for value of clay are for crude clay only. The annual value of clay products is several times greater, but is omitted because there is only one factory. Production began in 1875.

\* Includes granite (prior to 1916), crushed rock, rubble, rip-rap, paving blocks, sand, gravel.

| Lime and limestone |         | Miscellaneous stone, <sup>1</sup><br>value | Miscellaneous and unapportioned |         |   |
|--------------------|---------|--|---------------------------------|---------|---|
| Amount             | Value   |  | Amount                          | Value   | Substance   |
|                    |         |  |                                 |         |   |
|                    |         |  |                                 |         |   |
|                    |         |  |                                 |         |   |
|                    |         |  |                                 |         |   |
|                    |         |  |                                 |         |   |
|                    |         |  |                                 |         |   |
|                    |         |  |                                 |         |   |
|                    |         |  |                                 |         |   |
|                    |         |  |                                 |         |   |
|                    |         |  |                                 |         |   |
|                    |         | \$67,200                                   |                                 |         |   |
|                    |         | 56,620                                     | 25 tons                         | \$1,000 | Asbestos.   |
|                    |         | 44,216                                     |                                 |         |   |
|                    |         | 39,412                                     |                                 |         |   |
|                    |         | 29,833                                     |                                 |         |   |
|                    |         | 61,525                                     |                                 |         |   |
|                    |         | 115,669                                    |                                 |         |   |
|                    |         | 102,847                                    |                                 |         |   |
|                    |         | 156,402                                    |                                 |         |   |
| \$1,500            | \$9,000 | 198,530                                    |                                 | 280     | Platinum.   |
| \$4,000            | 4,000   | 123,448                                    |                                 | 1,968   | Quartz.   |
|                    |         | 116,746                                    |                                 | 375     | Platinum.   |
| \$15,533           | 8,737   |  | 2 ozs.                          | 36      | Platinum.   |
| \$11,699           | 11,950  | 71,130                                     | 0.66 ozs.                       | 12      | Platinum.   |
|                    |         |  | 50 tons                         | 2,500   | Asbestos.   |
| \$11,430           | 11,430  | 118,722                                    | 70 tons                         | 3,500   | Asbestos.   |
| \$38,869           | 79,768  |  |                                 |         |   |
| \$1,727            | 1,710   | 178,460                                    | 50 tons                         | 5,000   | Asbestos.   |
| \$24,322           | 25,864  | 203,783                                    |                                 | 862,362 | Unapportioned, 1901-1902.                         |
| \$10,000           | 12,100  | 242,773                                    | 60 tons                         | 6,000   | Asbestos.   |
|                    |         |  | 200 tons                        | 20,000  | Asbestos.   |
|                    |         |  | 125 tons                        | 500     | Asbestos.   |
|                    |         | 218,951                                    | 300 tons                        | 3,300   | Magnesite.  |
|                    |         |  | 90 tons                         | 584     | Mineral paint.                                    |
|                    |         |  | 50 tons                         | 500     | Magnesite.  |
| \$222,595          | 200,000 | 231,415                                    | 1,000 tons                      | 2,000   | Glass sand.                                       |
|                    |         |  | 805 lbs.                        | 35      | Lead.   |
|                    |         | 205,749                                    | 2,000 tons                      | 4,000   | Quartz.   |
| \$202,575          | 202,575 | 203,593                                    | 385 lbs.                        | 15      | Lead.   |
| \$1,236            | 2,432   | 98,187                                     | 711 lbs.                        | 33      | Lead.   |
|                    |         |  |                                 | 346,810 | Asbestos and copper.                              |
|                    |         |  | 744 tons                        | 11,956  | Chromite.   |
|                    |         | 17,026                                     |                                 | 80,931  | Granite   |
|                    |         |  |                                 | 10,548  | Lead, limestone, magnesite.                       |
|                    |         |  | 4,287 tons                      | 105,384 | Chromite.   |
|                    |         | 10,727                                     |                                 | 30,392  | Granite.  |
|                    |         |  |                                 | 92,624  | Asbestos, brick, platinum, tile, gems, magnesite. |
|                    |         |  | 4,963 tons                      | 276,765 | Chromite.   |
|                    |         | 4,266                                      |                                 | 30,882  | Granite.  |
|                    |         |  |                                 | 21,360  | Magnesite and silica.                             |
|                    |         |  | 1,018 tons                      | 24,000  | Chromite.   |
|                    |         | 4,330                                      |                                 | 98,513  | Clay and clay products.                           |
|                    |         |  |                                 | 36,233  | Granite.  |
|                    |         |  |                                 | 1,055   | Other minerals.                                   |
|                    |         |  | 300 tons                        | 7,985   | Chromite.   |
|                    |         | 6,688                                      |                                 | 212,625 | Granite.  |
|                    |         |  |                                 | 5,825   | Other minerals.                                   |

<sup>4</sup> See under 'Unapportioned.'

## MINERAL PRODUCTION OF

| Year        | Gold,<br>value | Silver,<br>value | Copper     |           | Brick    |             | Pottery clay† |             |
|-------------|----------------|------------------|------------|-----------|----------|-------------|---------------|-------------|
|             |                |                  | Pounds     | Value     | M        | Value       | Tons          | Value       |
| 1921.....   | \$132,468      | \$1,068          |            |           | and tile | \$144,508   | 76,665        | \$95,930    |
| 1922.....   | 119,673        | 952              |            |           | and tile | 118,797     | 79,531        | 111,166     |
| 1923.....   | 75,732         | 297              |            |           |          |             | 82,919        | 143,097     |
| 1924.....   | 108,757        | 534              |            |           | and tile | 186,053     | 97,670        | 146,508     |
| 1925.....   | 121,785        | 620              |            |           | and tile | 147,981     | 102,598       | 138,813     |
| 1926.....   | 82,921         | 346              |            |           | and tile | 150,591     | 104,250       | 147,241     |
| 1927.....   | 97,494         | 440              |            |           |          |             | 61,388        | 106,710     |
| 1928.....   | 71,959         | 338              | "          |           | "        |             | 110,353       | 163,644     |
| 1929.....   | 34,691         | 133              |            |           | "        |             | 118,704       | 158,531     |
| 1930.....   | 29,338         | 73               | "          |           | "        |             | 85,377        | 116,642     |
| 1931.....   | 72,409         | 271              | "          |           | "        |             | 78,501        | 122,515     |
| 1932.....   | 104,089        | 284              | "          |           | "        |             | 35,825        | 49,037      |
| 1933.....   | 167,774        | 475              | "          |           | "        |             | 40,658        | 59,261      |
| 1934.....   | 547,892        | 6,987            | "          |           | "        |             | 38,975        | 60,555      |
| Totals..... | \$34,061,739   | \$213,690        | 34,368,895 | \$957,369 | "        | \$1,339,550 | 1,876,883     | \$2,291,911 |

† Figures for value of clay are for crude clay only. The annual value of clay products is several times greater, but is omitted because there is only one factory. Production began in 1875.

1 Includes granite (prior to 1916), crushed rock, rubble, rip-rap, paving blocks, sand, gravel.

2 Barrels of lime.

3 Tons of limestone.

4 See under 'Unapportioned.'

5 Includes chromite, mineral paint, mineral water.

6 Includes brick, building tile, chromite.

7 Includes mineral paint, mineral water, silica (quartz).

8 Includes chromite, copper, silica (quartz).

## PLACER COUNTY, 1880-1934—Continued

| Lime and limestone |           | Miscellaneous stone, <sup>1</sup> value | Miscellaneous and unapportioned |             |   |
|--------------------|-----------|---|---------------------------------|-------------|---|
| Amount             | Value     |   | Amount                          | Value       | Substance   |
|                    |           | \$21,490                                |                                 | \$48,328    | Granite.  |
|                    |           |   |                                 | 5,278       | Chromite, mineral paint, silica.  |
|                    |           |   |                                 | 12,980      | Granite.  |
|                    |           | 24,430                                  | 2,000 tons                      | 5,500       | Silica.   |
|                    |           |   |                                 | 12,477      | Other minerals. <sup>6</sup>  |
|                    |           |   |                                 | 5,146       | Granite.  |
|                    |           | 139,829                                 | 3,656 tons                      | 10,040      | Silica (quartz).  |
|                    |           |   |                                 | 120,372     | Other minerals. <sup>6</sup>  |
|                    |           |   |                                 | 19,155      | Granite.  |
|                    |           | 15,573                                  |                                 | 15,600      | Other minerals. <sup>7</sup>  |
|                    |           |   |                                 | 14,929      | Granite.  |
|                    |           | 117,990                                 |                                 | 8,295       | Other minerals. <sup>8</sup>  |
|                    |           |   | 6,092 cu. ft.                   | 11,969      | Granite.  |
|                    |           | 81,814                                  |                                 | 6,000       | Other minerals.   |
|                    |           |   | 8,590 cu. ft.                   | 18,109      | Granite.  |
|                    |           | 40,357                                  | 2,700 tons                      | 8,100       | Silica.   |
|                    |           |   |                                 | 89,014      | Other minerals.   |
|                    |           | 23,096                                  | 12,370 cu. ft.                  | 19,655      | Granite.  |
|                    |           |   |                                 | 54,443      | Brick and hollow building tile, copper, mineral paint, mineral water.                   |
|                    |           |   |                                 | 20,385      | Granite.  |
|                    |           | 9,469                                   |                                 | 43,136      | Brick and hollow building tile, mineral paint, silica.                                  |
|                    |           |   | 9,246 cu. ft.                   | 15,841      | Granite.  |
|                    |           | 133,339                                 |                                 | 28,484      | Brick and hollow building tile, chromite, copper, mineral paint, silica.                |
|                    |           |   |                                 | 6,300       | Granite.  |
|                    |           | 55,666                                  |                                 | 28,687      | Brick and hollow building tile, chromite, copper, mineral paint, mineral water, silica. |
|                    |           |   | 6,450 cu. ft.                   | 22,625      | Granite.  |
|                    |           | 40,405                                  |                                 | 23,808      | Brick and hollow building tile, copper, mineral water.                                  |
|                    |           | 41,761                                  |                                 | 24,595      | Brick, chromite, copper, granite, lead, mineral water.                                  |
|                    |           | 33,413                                  |                                 | 29,385      | Brick, copper, granite, lead, mineral water, chromite.                                  |
|                    | \$569,566 | \$3,706,889                             |                                 | \$3,306,524 |   |

## MINERAL PRODUCTION OF

| Year   | Copper      |              | Gold,<br>value | Silver,<br>value |
|--------|-------------|--------------|----------------|------------------|
|        | Pounds      | Value        |                |                  |
| 1880   |             |              | \$857,124      | \$181            |
| 1881   |             |              | 1,350,000      | 2,000            |
| 1882   |             |              | 1,250,000      |                  |
| 1883   |             |              | 950,000        |                  |
| 1884   |             |              | 900,000        |                  |
| 1885   |             |              | 840,308        |                  |
| 1886   |             |              | 834,452        | 62               |
| 1887   |             |              | 698,069        | 16               |
| 1888   |             |              | 650,000        | 250              |
| 1889   |             |              | 796,754        | 235              |
| 1890   |             |              | 490,664        | 811              |
| 1891   |             |              | 482,462        |                  |
| 1892   |             |              | 432,295        | 11,731           |
| 1893   |             |              | 362,488        | 14               |
| 1894   |             |              | 499,359        |                  |
| 1895   |             |              | 602,951        | 271              |
| 1896   |             |              | 462,527        | 83               |
| 1897   |             |              | 339,252        | 701              |
| 1898   |             |              | 369,609        |                  |
| 1899   |             |              | 381,151        | 15               |
| 1900   |             |              | 365,210        | 4,159            |
| 1901   |             |              | 401,287        | 2,508            |
| 1902   |             |              | 380,686        | 517              |
| 1903   | 1,900       | \$247        | 424,112        | 510              |
| 1904   |             |              | 270,439        | 464              |
| 1905   | 1,006       | 157          | 283,810        | 530              |
| 1906   |             |              | 229,350        | 1,055            |
| 1907   |             |              | 219,355        | 948              |
| 1908   |             |              | 254,737        | 3,560            |
| 1909   |             |              | 157,491        | 587              |
| 1910   |             |              | 187,207        | 1,038            |
| 1911   |             |              | 228,785        | 1,125            |
| 1912   | 6,963       | 1,149        | 193,237        | 957              |
| 1913   | 19,533      | 3,028        | 138,368        | 705              |
| 1914   | 169,089     | 22,489       | 140,000        | 2,900            |
| 1915   | 3,164,496   | 553,787      | 167,440        | 19,025           |
| 1916   | 4,932,928   | 1,213,500    | 133,385        | 46,542           |
| 1917   | 7,462,870   | 2,037,364    | 131,955        | 74,461           |
| 1918   | 11,098,016  | 2,741,210    | 125,207        | 156,750          |
| 1919   | 10,193,951  | 1,896,075    | 83,600         | 175,846          |
| 1920   | 9,583,834   | 1,763,425    | 102,097        | 153,373          |
| 1921   | 11,584,216  | 1,494,364    | 127,148        | 171,090          |
| 1922   | 20,677,771  | 2,791,499    | 223,025        | 297,254          |
| 1923   | 22,883,609  | 3,363,891    | 174,871        | 243,970          |
| 1924   | 25,557,362  | 3,348,015    | 277,571        | 247,569          |
| 1925   | 26,950,029  | 3,826,904    | 249,540        | 294,254          |
| 1926   | 22,163,035  | 3,102,825    | 247,667        | 216,620          |
| 1927   | 21,055,425  | 3,758,261    | 321,016        | 179,108          |
| 1928   | 21,141,121  | 3,044,321    | 332,634        | 191,134          |
| 1929   | 25,253,603  | 4,444,034    | 391,683        | 271,712          |
| 1930   | 19,529,224  | 2,538,799    | 405,359        | 164,025          |
| 1931   | 12,473,960  | 1,135,130    | 308,443        | 93,472           |
| 1932   | 1,043,390   | 65,734       | 76,781         | 8,180            |
| 1933   |             |              | 70,000         | 402              |
| 1934   | 773         | 59           | 153,056        | 718              |
| Totals | 276,948,104 | \$43,146,867 | \$21,526,017   | \$3,043,438      |

<sup>1</sup> Includes crushed rock, rubble, rip-rap, sand, gravel.

<sup>2</sup> See under 'Unapportioned.'

<sup>3</sup> Includes copper erroneously credited to Lassen County in those years, on account of shipping point being Doyle, though the mines were located in Plumas County.



[illegible]

## MINERAL PRODUCTION OF

| Year        | Gold,<br>value | Silver,<br>value | Platinum |          | Brick    |             |
|-------------|----------------|------------------|----------|----------|----------|-------------|
|             |                |                  | Ounces   | Value    | M        | Value       |
| 1880.....   | \$342,514      |                  |          |          |          |             |
| 1881.....   | 425,000        | \$1,000          |          |          |          |             |
| 1882.....   | 400,000        |                  |          |          |          |             |
| 1883.....   | 480,000        |                  |          |          |          |             |
| 1884.....   | 270,000        |                  |          |          |          |             |
| 1885.....   | 353,522        |                  |          |          |          |             |
| 1886.....   | 280,000        |                  |          |          |          |             |
| 1887.....   | 158,526        | 176              |          |          |          |             |
| 1888.....   | 150,000        |                  |          |          |          |             |
| 1889.....   | 210,075        |                  |          |          |          |             |
| 1890.....   | 193,585        |                  |          |          |          |             |
| 1891.....   | 142,830        | 4                |          |          |          |             |
| 1892.....   | 121,900        |                  |          |          |          |             |
| 1893.....   | 90,091         |                  |          |          |          |             |
| 1894.....   | 70,326         |                  |          |          | 11,250   | \$56,250    |
| 1895.....   | 145,873        |                  |          |          | 13,125   | 65,625      |
| 1896.....   | 133,050        |                  |          |          | 8,700    | 44,200      |
| 1897.....   | 93,050         |                  |          |          | 3,100    | 16,700      |
| 1898.....   | 57,301         |                  |          |          | 11,000   | 44,000      |
| 1899.....   | 115,906        |                  |          |          | 15,600   | 93,600      |
| 1900.....   | 176,007        | 473              |          |          | 8,900    | 53,400      |
| 1901.....   | 229,034        | 253              |          |          | 12,236   | 62,180      |
| 1902.....   | 425,894        | 330              |          |          | 10,492   | 78,195      |
| 1903.....   | 335,946        | 234              |          |          | 15,000   | 120,000     |
| 1904.....   | 419,287        | 75               |          |          | 4,500    | 20,000      |
| 1905.....   | 668,382        | 206              | 40       | \$700    | 18,000   | 130,000     |
| 1906.....   | 986,624        | 3,640            | 11       | 200      | 12,000   | 108,000     |
| 1907.....   | 790,973        | 2,034            |          |          | 16,078   | 128,624     |
| 1908.....   | 1,166,055      | 1,621            |          |          | 7,936    | 63,491      |
| 1909.....   | 1,669,814      | 2,856            |          |          |          |             |
| 1910.....   | 1,396,874      | 4,606            |          |          |          |             |
| 1911.....   | 1,812,826      | 3,047            |          |          | 13,017   | 76,571      |
| 1912.....   | 1,712,587      | 3,544            |          |          | 26,073   | 161,535     |
| 1913.....   | 2,503,933      | 3,406            |          |          | 22,535   | 144,191     |
| 1914.....   | 2,164,491      | 3,481            | 223      | 7,108    | 22,862   | 160,923     |
| 1915.....   | 2,131,813      | 3,151            | 196      | 6,217    | 9,920    | 82,973      |
| 1916.....   | 1,833,855      | 3,578            | 195      | 8,892    | 8,924    | 91,615      |
| 1917.....   | 1,919,581      | 4,487            | 157      | 12,453   | and tile | 122,886     |
| 1918.....   | 1,694,724      | 4,637            | "        |          |          | 79,312      |
| 1919.....   | 1,714,193      | 5,276            | "        |          |          |             |
| 1920.....   | 1,575,033      | 4,534            | "        |          |          | 248,433     |
| 1921.....   | 1,690,662      | 5,254            | "        |          |          | 216,402     |
| 1922.....   | 1,350,749      | 3,392            |          |          |          | 259,263     |
| 1923.....   | 1,331,227      | 2,566            | "        |          |          | 327,636     |
| 1924.....   | 1,150,687      | 1,753            |          |          |          | 290,213     |
| 1925.....   | 1,302,320      | 1,920            |          |          |          | 354,078     |
| 1926.....   | 1,304,046      | 1,627            |          |          |          | 388,697     |
| 1927.....   | 1,211,278      | 1,472            |          |          |          | 295,677     |
| 1928.....   | 1,558,173      | 1,779            | "        |          |          | 295,669     |
| 1929.....   | 1,492,083      | 1,583            | "        |          |          | 228,312     |
| 1930.....   | 1,724,712      | 1,313            | "        |          |          | 195,807     |
| 1931.....   | 1,871,195      | 1,056            | "        | 144      | 5,876    | 151,539     |
| 1932.....   | 2,100,250      | 1,120            | "        |          |          | 85,187      |
| 1933.....   | 2,996,669      | 1,768            | "        |          |          | 75,081      |
| 1934.....   | 3,555,468      | 2,940            | "        |          |          | 40,572      |
| Totals..... | \$56,200,394   | \$86,192         | 1,026    | \$41,446 |          | \$5,461,840 |

\* Includes crushed rock, rubble, rip-rap, sand, gravel, paving blocks.

\* Recalculated to 'commercial' from 'coining value' as originally published.

\* See under 'Unapportioned.'

\* State Prison use, value estimated, as none reported.

[illegible]

## MINERAL PRODUCTION OF

| Year | Quicksilver |           | Lime    |          | Gypsum |         |
|------|-------------|-----------|---------|----------|--------|---------|
|      | Flasks      | Value     | Barrels | Value    | Tons   | Value   |
| 1865 | 17,455      | \$943,617 |         |          |        |         |
| 1866 | 6,525       | 346,673   |         |          |        |         |
| 1876 | 11,493      | 527,529   |         |          |        |         |
| 1868 | 12,180      | 550,062   |         |          |        |         |
| 1869 | 10,315      | 473,459   |         |          |        |         |
| 1870 | 9,888       | 567,373   |         |          |        |         |
| 1871 | 8,180       | 516,158   |         |          |        |         |
| 1872 | 8,171       | 538,714   |         |          |        |         |
| 1873 | 7,735       | 621,353   |         |          |        |         |
| 1874 | 6,911       | 726,899   |         |          |        |         |
| 1875 | 8,432       | 709,553   |         |          |        |         |
| 1876 | 7,272       | 319,968   |         |          |        |         |
| 1877 | 2,000       | 139,000   |         |          |        |         |
| 1878 | 6,316       | 235,587   |         |          |        |         |
| 1878 | 5,138       | 169,040   |         |          |        |         |
| 1879 | 4,425       | 132,048   |         |          |        |         |
| 1880 | 3,209       | 99,479    |         |          |        |         |
| 1881 | 2,775       | 82,778    |         |          |        |         |
| 1882 | 1,953       | 55,123    |         |          |        |         |
| 1883 | 1,606       | 46,173    |         |          |        |         |
| 1884 | 1,025       | 31,263    |         |          |        |         |
| 1885 | 1,144       | 35,178    |         |          |        |         |
| 1886 | 1,406       | 49,913    |         |          |        |         |
| 1887 | 1,890       | 80,088    |         |          |        |         |
| 1888 | 1,320       | 56,100    |         |          |        |         |
| 1889 | 980         | 44,100    |         |          |        |         |
| 1890 | 977         | 51,293    |         |          |        |         |
| 1891 | 792         | 35,838    |         |          |        |         |
| 1892 | 848         | 34,523    |         |          |        |         |
| 1893 | 869         | 31,936    |         |          |        |         |
| 1894 | 1,005       | 30,861    | 40,000  | \$44,000 | 762    | \$9,144 |
| 1895 | 1,100       | 36,000    | 41,000  | 41,000   | 750    | 8,250   |
| 1896 | 1,335       | 46,725    | 40,000  | 35,000   | 300    | 3,000   |
| 1897 | 3,605       | 135,185   | 25,000  | 18,500   | 300    | 2,000   |
| 1898 | 5,000       | 190,000   |         |          | 500    | 4,500   |
| 1899 | 4,780       | 245,000   | 16,600  | 18,675   | 100    | 700     |
| 1900 | 3,990       | 180,000   | 7,300   | 8,800    |        |         |
| 1901 | 4,800       | 242,300   |         |          |        |         |
| 1902 | 7,291       | 306,081   |         |          |        |         |
| 1903 | 8,180       | 344,251   |         |          |        |         |
| 1904 | 8,480       | 314,000   |         |          |        |         |
| 1905 | 7,764       | 279,651   | 15,000  | 15,000   |        |         |
| 1906 | 7,203       | 262,909   |         |          |        |         |
| 1907 | 7,675       | 292,878   | 8,453   | 8,453    |        |         |
| 1908 | 9,600       | 405,792   |         |          | 2,000  | 8,000   |
| 1909 | 8,900       | 440,241   |         |          | 6,000  | 34,576  |
| 1910 | 10,800      | 488,700   |         |          | 12,000 | 50,000  |
| 1911 | 9,775       | 449,748   |         |          | 10,000 | 30,625  |
| 1912 | 9,743       | 409,596   |         |          | 8,000  | 32,000  |
| 1913 | 9,719       | 390,995   |         |          | 11,000 | 35,000  |
| 1914 | 6,633       | 325,349   |         |          | 7,000  | 21,000  |
| 1915 | 6,291       | 475,370   |         |          |        |         |
| 1916 | 11,100      | 1,032,156 |         |          |        |         |
| 1917 | 11,150      | 1,057,770 |         |          |        |         |
| 1918 | 10,715      | 1,234,027 |         |          |        |         |
| 1919 | 7,409       | 668,989   |         |          |        |         |
| 1920 | 3,887       | 296,942   |         |          |        |         |
| 1921 |             |           |         |          |        |         |

<sup>1</sup> Includes crushed rock, rubble, rip-rap, sand, gravel.

<sup>2</sup> Production of New Idria Mine from 1858-1866; yearly details not obtainable, though New Idria began operation in 1850.

<sup>3</sup> Estimated output of Cerro Bonito, Monterey and Stayton mines, 1870-1877; yearly details concealed under heading of 'various mines' in early reports.

<sup>4</sup> Includes bituminous rock.

<sup>5</sup> Flasks of 76½ pounds previous to June, 1904; of 75 pounds thence, through 1927; of 76 pounds since January, 1928.

<sup>6</sup> See under 'Unapportioned.'

| Mineral water |       | Miscellaneous stone, <sup>1</sup><br>value | Miscellaneous and unapportioned |                |  |
|---------------|-------|--|---------------------------------|----------------|--|
| Gallons       | Value |  | Amount                          | Value          | Substance  |
|               |       |  |                                 |                |  |
|               |       |  |                                 |                |  |
|               |       |  |                                 |                |  |
|               |       |  |                                 |                |  |
|               |       |  |                                 |                |  |
|               |       |  |                                 |                |  |
|               |       |  |                                 |                |  |
|               |       |  |                                 |                |  |
|               |       |  |                                 |                |  |
|               |       |  |                                 |                |  |
|               |       |  |                                 |                |  |
|               |       |  |                                 |                |  |
|               |       |  |                                 |                |  |
|               |       |  |                                 |                |  |
|               |       |  |                                 |                |  |
|               |       |  |                                 |                |  |
|               |       |  |                                 |                |  |
|               |       |  |                                 |                |  |
|               |       |  |                                 |                |  |
|               |       | \$19,000                                   | 58 tons                         | \$2,280        | Antimony.  |
| 5,000         | \$300 | 6,000                                      | 2 tons                          | 70             | Antimony.  |
| 500           | 100   | 2,638                                      |                                 |                |  |
| 900           | 450   | *17,500                                    | 45 tons                         | 135            | Coal.  |
| 1,000         | 500   | *25,240                                    | 19 tons                         | 380            | Asphalt.   |
| 10,000        | 3,750 | 13,000                                     | 100 tons                        | 100            | Limestone.   |
| 500           | 125   | *12,794                                    |                                 |                |  |
| 600           | 150   | 22,000                                     |                                 |                |  |
| 10,000        | 400   | 23,200                                     |                                 |                |  |
|               |       | 16,500                                     | 206 tons                        | 2,472          | Asphalt.   |
| 500           | 500   | 64,994                                     |                                 |                |  |
| 2,600         | 3,120 | 23,000                                     |                                 |                |  |
| 26,000        | 2,600 | 48,661                                     |                                 |                |  |
| 26,000        | 2,600 | 63,220                                     |                                 | 16,500         | Gems.  |
| 3,120         | 1,560 | 83,709                                     |                                 | 130,000        | Unapportioned, 1900-1909.  |
| 3,500         | 1,400 | 94,243                                     |                                 |                |  |
| 3,600         | 1,540 | 107,558                                    |                                 |                |  |
| 26,000        | 1,240 | 83,232                                     |                                 |                |  |
| 7,000         | 4,500 | 119,500                                    |                                 |                |  |
| 700           | 280   | 110,630                                    |                                 |                |  |
| 1,200         | 300   | 155,000                                    | 260 M<br>2,500 tons             | 1,560<br>9,500 | Brick.<br>Dolomite.  |
| "             |       | 155,250                                    | 8,100 tons                      | 335            | Other minerals.  |
| "             |       | 101,148                                    |                                 | 25,515         | Dolomite.  |
| "             |       | 103,295                                    |                                 | 526            | Antimony and mineral water.  |
| "             |       |  | 7,000 tons                      | 59,245         | Antimony, chromite, magnesite, mineral water.                      |
| "             |       |  | 130 tons                        | 15,000         | Dolomite.  |
| "             |       |  | 5,000 tons                      | 7,000          | Chromite.  |
| "             |       |  | 5,340 tons                      | 20,625         | Dolomite.  |
| "             |       |  |                                 | 48,060         | Magnesite.   |
| "             |       |  |                                 | 124,456        | Cement, manganese, mineral water.                                  |
| "             |       | 164,300                                    | 7,000 tons                      | 24,500         | Dolomite.  |
| "             |       | 207,250                                    |                                 | 418,687        | Cement, magnesite, mineral water.                                  |
| "             |       | 269,334                                    | 18,000 tons                     | 57,750         | Dolomite.  |
| "             |       |  |                                 | 921,082        | Cement, magnesite, mineral water.                                  |
| "             |       |  |                                 | 1,116,759      | Asbestos, cement, dolomite, magnesite, mineral water, quicksilver. |

## MINERAL PRODUCTION OF

| Year   | Quicksilver |              | Lime     |           | Gypsum |           |
|--------|-------------|--------------|----------|-----------|--------|-----------|
|        | Flasks      | Value        | Barrels  | Value     | Tons   | Value     |
| 1922   | •           |              |          |           |        |           |
| 1923   | •           |              |          |           |        |           |
| 1924   | 4,670       | \$320,758    |          |           |        |           |
| 1925   | 6,085       | 486,797      |          |           |        |           |
| 1926   | •           |              |          |           |        |           |
| 1927   | 4,380       | 485,409      |          |           |        |           |
| 1928   | 3,800       | 452,345      |          |           |        |           |
| 1929   | •           |              |          |           |        |           |
| 1930   | •           |              | •        |           |        |           |
| 1931   | 4,120       | 349,619      | •        |           |        |           |
| 1932   | 594         | 31,036       | •        |           |        |           |
| 1933   | 711         | 38,765       |          |           |        |           |
| 1934   | 746         | 52,699       |          |           |        |           |
| Totals | •366,276    | \$21,058,762 | •193,353 | \$189,428 | 58,712 | \$238,795 |

• Includes crushed rock, rubble, rip-rap, sand, gravel.

• See under 'Unapportioned.'

## SAN BENITO COUNTY, 1865-1934—Continued

| Mineral water |          | Miscellaneous stone, <sup>1</sup> value | Miscellaneous and unapportioned |              |  |
|---------------|----------|---|---------------------------------|--------------|--|
| Gallons       | Value    |   | Amount                          | Value        | Substance  |
| "             | -----    | \$259,805                               | { 6,650 tons                    | \$30,100     | Dolomite.  |
| "             | -----    | 424,854                                 | -----                           | 1,504,343    | Asbestos, cement, magnesite, mineral water, quicksilver.                     |
| "             | -----    | 269,369                                 | -----                           | 1,853,049    | Asbestos, cement, dolomite, magnesite, mineral water, quicksilver.           |
| -----         | -----    | 351,363                                 | -----                           | 1,554,476    | Asbestos, cement, coal, dolomite, magnesite, mineral water.                  |
| -----         | -----    | 328,460                                 | -----                           | 1,779,236    | Asbestos, cement, dolomite, magnesite, mineral water.                        |
| -----         | -----    | 328,460                                 | -----                           | 2,072,390    | Antimony, asbestos, cement, dolomite, magnesite, mineral water, quicksilver. |
| -----         | -----    | 371,050                                 | -----                           | 1,045,395    | Antimony, asbestos, cement, mineral water, pyrite.                           |
| "             | -----    | "                                       | -----                           | 1,202,373    | Cement, magnesite, mineral water, pyrite, miscellaneous stone.               |
| -----         | -----    | "                                       | -----                           | 1,908,462    | Cement, magnesite, quicksilver, miscellaneous stone.                         |
| -----         | -----    | "                                       | -----                           | 1,389,490    | Cement, lime, magnesite, quicksilver, miscellaneous stone.                   |
| -----         | -----    | "                                       | -----                           | 304,665      | Bentonite, gems (benitoite), lime, limestone, miscellaneous stone.           |
| -----         | -----    | 142,638                                 | -----                           | 26,250       | Bentonite, limestone.  |
| -----         | -----    | "                                       | -----                           | 208,714      | Other minerals.  |
| -----         | -----    | "                                       | -----                           | 214,158      | Bentonite and miscellaneous stone.   |
| •128,720      | \$25,415 | •\$4,259,735                            | -----                           | \$18,095,638 |  |

## MINERAL PRODUCTION OF

| Year | Gold,<br>value | Silver,<br>value | Brick    |         | Gems,<br>value | Granite,<br>value | Mineral water |          |
|------|----------------|------------------|----------|---------|----------------|-------------------|---------------|----------|
|      |                |                  | M        | Value   |                |                   | Gallons       | Value    |
| 1880 | \$81,558       |                  |          |         |                |                   |               |          |
| 1881 | 60,000         |                  |          |         |                |                   |               |          |
| 1882 | 100,000        |                  |          |         |                |                   |               |          |
| 1883 | 50,000         | \$5,000          |          |         |                |                   |               |          |
| 1884 | 65,000         | 5,000            |          |         |                |                   |               |          |
| 1885 | 95,125         | 2,000            |          |         |                |                   |               |          |
| 1886 | 140,450        | 78,758           |          |         |                |                   |               |          |
| 1887 | 66,900         | 198,537          |          |         |                |                   |               |          |
| 1888 | 160,000        | 192,000          |          |         |                |                   |               |          |
| 1889 | 275,440        | 25,740           |          |         |                |                   |               |          |
| 1890 | 453,800        | 100              |          |         |                |                   |               |          |
| 1891 | 467,000        |                  |          |         |                |                   |               |          |
| 1892 | 396,518        | 2,051            |          |         |                |                   |               |          |
| 1893 | 105,860        |                  |          |         |                |                   |               |          |
| 1894 | 266,409        | 190              |          |         |                |                   |               |          |
| 1895 | 344,308        | 600              |          |         |                |                   | 48,000        | \$11,500 |
| 1896 | 560,578        | 40               |          |         |                |                   | 45,000        | 35,000   |
| 1897 | 592,328        |                  |          |         |                |                   | 25,000        | 5,000    |
| 1898 | 673,196        | 300              | 672      | \$2,688 |                | \$4,875           | 4,320         | 3,000    |
| 1899 | 333,650        |                  | 860      | 4,300   |                | 8,150             | 12,000        | 6,000    |
| 1900 | 335,937        | \$9,500          | 734      | 3,261   | \$500          | 9,900             | 6,500         | 3,250    |
| 1901 | 413,320        | \$2,800          | 1,158    | 5,791   | 20,000         | 22,400            | 6,000         | 3,000    |
| 1902 | 338,877        | 1,994            | 688      | 3,440   | 150,000        | 13,175            | 5,158         | 1,289    |
| 1903 | 461,516        | 1,444            | 2,150    | 11,150  | 100,000        | 16,308            | 6,000         | 3,000    |
| 1904 | 334,697        | 100              | 3,824    | 23,700  | 136,000        | 7,851             |               |          |
| 1905 | 109,712        | 100              | 3,190    | 28,350  | 66,000         | 10,250            |               |          |
| 1906 | "              |                  | 3,950    | 34,900  | 284,500        | 10,250            |               |          |
| 1907 | 7,455          | 35               | 4,474    | 36,430  | 206,336        | 23,650            | 2,000         | 2,000    |
| 1908 | 6,920          | 86               | 2,112    | 16,719  | 121,500        | 10,000            | 9,810         | 11,772   |
| 1909 | 12,812         | 1,721            | 5,844    | 38,946  | 125,000        |                   | 10,210        | 12,022   |
| 1910 | "              |                  | 8,813    | 62,647  | 110,300        |                   | 40,550        | 30,110   |
| 1911 | "              |                  | 9,500    | 68,000  | 25,000         |                   | 60,090        | 87,000   |
| 1912 |                |                  | 10,500   | 80,000  | 12,500         |                   | 52,060        | 17,218   |
| 1913 |                |                  | 9,384    | 68,400  | 7,465          |                   | 41,560        | 15,325   |
| 1914 |                |                  | 5,457    | 56,392  | 1,150          |                   | 8,865         | 911      |
| 1915 | 1,364          | 9                | 1,260    | 21,025  | 2,465          |                   | 10,350        | 1,035    |
| 1916 |                |                  | 4,001    | 36,842  | 2,710          | "                 | "             |          |
| 1917 |                | "                | and tile | 21,423  | "              | "                 | "             |          |
| 1918 |                |                  |          | 29,080  |                | "                 | "             |          |
| 1919 | 1,470          | 12               |          | "       | "              | 15,215            | "             |          |
| 1920 |                |                  |          | 87,612  | 2,100          | 7,838             |               |          |
| 1921 | "              | "                |          | "       | 1,405          | 22,444            | 70,924        | 9,161    |
| 1922 | "              | "                |          |         | 400            | 35,673            | 71,781        | 9,262    |

<sup>1</sup> Includes crushed rock, rubble, rip-rap, sand, gravel, paving blocks, grinding-mill pebbles.

<sup>2</sup> Recalculated to 'commercial' from 'coining value' as originally published.

<sup>3</sup> See under 'Unapportioned.'

<sup>4</sup> Included under Imperial County production.



[illegible]

## MINERAL PRODUCTION OF

| Year        | Gold,<br>value | Silver,<br>value | Brick |             | Gems,<br>value | Granite,<br>value | Mineral water |           |
|-------------|----------------|------------------|-------|-------------|----------------|-------------------|---------------|-----------|
|             |                |                  | M     | Value       |                |                   | Gallons       | Value     |
| 1923.....   | \$822          | \$144            | "     | "           | \$8,530        | \$40,000          | 59,795        | \$6,570   |
| 1924.....   | 4,830          | 97               |       | \$232,113   | 1,925          | 94,006            | 107,097       | 8,642     |
| 1925.....   | 5,134          | 58               |       | 119,165     | 9,413          | 108,703           | 81,374        | 21,137    |
| 1926.....   | 10,543         | 340              |       | 230,484     | 4,000          | 45,327            | 156,380       | 23,259    |
| 1927.....   | 11,490         | 92               |       | 165,170     | 3,500          | 63,142            | 109,685       | 51,559    |
| 1928.....   | 2,671          | 13               |       | 101,515     | 1,700          | 41,499            | 71,845        | 3,592     |
| 1929.....   | 1,282          | 5                |       | 146,221     | 2,210          | 28,884            | "             |           |
| 1930.....   | 2,234          | 10               |       | "           | "              | 27,411            | "             |           |
| 1931.....   | 3,988          | 15               |       | 79,633      | "              | 10,192            | "             |           |
| 1932.....   | 5,573          | 32               |       | "           | "              | 8,963             | "             |           |
| 1933.....   | 5,894          | 24               |       | "           | "              | 10,097            | "             |           |
| 1934.....   | 25,514         | 187              |       | 24,506      |                | 11,167            | "             |           |
| Totals..... | \$7,392,175    | \$529,134        |       | \$1,839,903 | \$1,406,609    | \$707,970         | \$1,121,294   | \$381,484 |

<sup>1</sup> Includes crushed rock, rubble, rip-rap, sand, gravel, paving blocks, grinding-mill pebbles.

<sup>2</sup> See under 'Unapportioned.'

<sup>3</sup> Includes bromine, lithia, magnesium chloride, salt, silica.

<sup>4</sup> Includes bromine, feldspar, magnesium chloride, mineral water, salt, silica, tube-mill pebbles.

<sup>5</sup> Includes brick and hollow building tile, bromine, feldspar, gems, magnesium chloride, mineral water, salt, silica (quartz), tube-mill pebbles.

<sup>6</sup> Includes bromine, gems, magnesium chloride, mineral water, salt, silica (quartz), tube-mill pebbles, paving blocks.

<sup>7</sup> Includes bentonite, brick and hollow building tile, bromine, clay (pottery), feldspar, gems, magnesium chloride, mineral water, salt, silica (quartz), tube-mill pebbles.

<sup>8</sup> Includes brick and hollow building tile, bromine, clay (pottery), feldspar, grinding-mill pebbles, magnesium chloride, mineral water, salt, silica (quartz).

<sup>9</sup> Includes bromine, clay (pottery), copper, feldspar, magnesium chloride, mineral water, salt, silica (quartz), tube-mill pebbles.

## SAN DIEGO COUNTY, 1880-1934—Continued

| Salt    |           | Miscellaneous stone <sup>1</sup> , value | Miscellaneous and unapportioned          |                                       |  |
|---------|-----------|--|--|---------------------------------------|--|
| Tons    | Value     |  | Amount                                   | Value                                 | Substance  |
|         |           | \$343,959                                | 5,603 tons<br>6,100 tons                 | \$100,977<br>42,800<br>277,394        | Pottery clay.<br>Feldspar.<br>Brick and tile, fuller's earth, lead, magnesium, chloride, marble, salt, silica (quartz).                    |
| "       |           | 379,094                                  | 12,783 tons<br>6,850 tons<br>109 tons    | 36,941<br>47,950<br>2,269             | Pottery clay.<br>Feldspar.<br>Lithia.  |
| "       |           | 508,538                                  | 26,976 tons                              | 205,252<br>66,427<br>291,182          | Arsenic, fuller's earth, magnesium chloride, salt.<br>Clay (pottery).<br>Feldspar, fuller's earth, lime, magnesium chloride, salt, silica. |
| "       |           | 529,640                                  | 30,187 tons<br>7,000 tons                | 58,269<br>54,000<br>258,462           | Clay (pottery).<br>Feldspar.<br>Bromine, copper, fuller's earth (fittering clay), lead, lithia, magnesium chloride, salt, zinc.            |
| "       |           | 889,642                                  | 16,190 tons<br>7,396 tons                | 31,765<br>69,661<br>333,410           | Clay (pottery).<br>Fuller's earth.<br>Bromine, feldspar, lithia, magnesium chloride, paving blocks, salt, heptane.                         |
| "       |           | 1,284,741                                | 33,396 tons<br>12,836 tons<br>5,488 tons | 63,898<br>82,255<br>47,740            | Clay (pottery).<br>Feldspar.<br>Fuller's earth.  |
| "       |           | 777,481                                  | 20,148 tons<br>8,414 tons                | 140,629<br>34,020<br>78,944           | Other minerals. <sup>8</sup><br>Clay (pottery).<br>Fuller's earth.   |
| "       |           | 651,926                                  | 15,517 tons<br>5,297 tons                | 378,240<br>25,785<br>55,696           | Other minerals. <sup>8</sup><br>Clay (pottery).<br>Fuller's earth.   |
| "       |           | 411,004                                  | 6,416 tons<br>11,421 tons<br>4,165 tons  | 539,985<br>69,010<br>15,487<br>54,620 | Other minerals. <sup>7</sup><br>Bentonite (fuller's earth).<br>Clay (pottery).<br>Feldspar.  |
| "       |           | 187,671                                  |  | 208,507                               | Other minerals. <sup>8</sup>   |
| "       |           | 374,796                                  |  | 172,937                               | Other minerals. <sup>9</sup>   |
| "       |           | 212,884                                  |  | 230,070                               | Other minerals. <sup>10</sup>  |
| "       |           |  |  | 213,008                               | Other minerals. <sup>11</sup>  |
| 178,107 | \$643,953 | \$9,600,821                              |  | \$9,035,183                           |  |

## MINERAL PRODUCTION OF SAN FRANCISCO COUNTY, 1894-1934

| Year   | Brick   |             | Miscellaneous stone <sup>1</sup> , value | Miscellaneous and unapportioned |           |                                     |
|--------|---------|-------------|--|---------------------------------|-----------|-------------------------------------|
|        | M       | Value       |  | Amount                          | Value     | Substance                           |
| 1894   |         |             | \$296,864                                | 20 tons                         | \$25      | Limestone.                          |
| 1895   |         |             | 379,696                                  |                                 |           |                                     |
| 1896   | 5,000   | \$37,500    | 285,167                                  |                                 |           |                                     |
| 1897   | 4,500   | 28,500      | 86,217                                   |                                 |           |                                     |
| 1898   |         |             | 129,595                                  |                                 |           |                                     |
| 1899   |         |             | 275,604                                  |                                 |           |                                     |
| 1900   |         |             | 58,400                                   |                                 |           |                                     |
| 1901   |         |             | 156,947                                  |                                 |           |                                     |
| 1902   | 25,800  | 238,800     | 156,300                                  |                                 |           |                                     |
| 1903   | 33,403  | 294,326     | 508,460                                  |                                 |           |                                     |
| 1904   | 39,509  | 367,911     | 332,220                                  |                                 |           |                                     |
| 1905   | 32,585  | 310,685     | 114,357                                  |                                 |           |                                     |
| 1906   | 7,208   | 58,289      | 106,250                                  | 8,500 tons                      | \$10,500  | Glass sand.                         |
| 1907   | 44,578  | 434,140     | 97,273                                   | 4,000 tons                      | 60,000    | Asphalt.                            |
| 1908   | 41,837  | 345,155     | 95,259                                   | 1,500 tons                      | 15,000    | Asphalt.                            |
| 1909   | 31,430  | 221,332     | 150,382                                  | 850 tons                        | 9,800     | Asphalt.                            |
| 1910   |         |             | 108,126                                  |                                 | 30,000    | Unapportioned, 1900-1909.           |
| 1911   |         |             | 119,636                                  | 1,000 tons                      | 12,000    | Asphaltum.                          |
| 1912   |         |             | 151,147                                  |                                 |           |                                     |
| 1913   |         |             | 110,551                                  |                                 |           |                                     |
| 1914   |         |             | 119,889                                  |                                 |           |                                     |
| 1915   |         |             | 128,270                                  |                                 |           |                                     |
| 1916   |         |             | 76,437                                   |                                 |           |                                     |
| 1917   |         |             | 107,957                                  |                                 |           |                                     |
| 1918   |         |             | 16,463                                   |                                 |           |                                     |
| 1919   |         |             | 65,541                                   |                                 |           |                                     |
| 1920   |         |             | 77,553                                   |                                 | 2,800     | Other minerals.                     |
| 1921   |         |             | 41,562                                   |                                 |           |                                     |
| 1922   |         |             | "  |                                 | 65,409    | Pumice, miscellaneous stone.        |
| 1923   |         |             | 117,341                                  |                                 |           |                                     |
| 1924   |         |             | 150,258                                  |                                 |           |                                     |
| 1925   |         |             | 131,158                                  |                                 |           |                                     |
| 1926   |         |             | 112,193                                  |                                 |           |                                     |
| 1927   |         |             | 62,701                                   |                                 |           |                                     |
| 1928   |         |             | 67,430                                   |                                 |           |                                     |
| 1929   |         |             | 75,245                                   |                                 |           |                                     |
| 1930   |         |             | 23,482                                   |                                 |           |                                     |
| 1931   |         |             | "  |                                 | 20,500    | Miscellaneous stone, mineral water. |
| 1932   |         |             | "  |                                 | 3,903     | Miscellaneous stone, mineral water. |
| 1933   |         |             | "  |                                 | 7,734     | Miscellaneous stone, mineral water. |
| 1934   |         |             | "  |                                 | 28,641    | Miscellaneous stone, mineral water. |
| Totals | 265,850 | \$2,336,638 | \$5,092,020                              |                                 | \$266,287 |                                     |

<sup>1</sup> Includes crushed rock, rubble, sand, gravel.<sup>2</sup> See under 'Unapportioned.'



## MINERAL PRODUCTION OF

| Year   | Brick     |             | Natural gas  |             |
|--------|-----------|-------------|--------------|-------------|
|        | M         | Value       | M cubic feet | Value       |
| 1885   |           |             |              |             |
| 1886   |           |             |              |             |
| 1894   |           |             |              | \$75,000    |
| 1895   |           |             |              | 100,000     |
| 1896   | 7,000     | \$35,000    |              | 85,157      |
| 1897   | 5,500     | 22,000      |              | 57,411      |
| 1898   | 6,500     | 34,000      |              | 57,289      |
| 1899   | 5,500     | 27,000      | 102,960      | 84,880      |
| 1900   | 2,000     | 20,000      | 27,000       | 19,862      |
| 1901   | 2,000     | 20,000      |              | 60,456      |
| 1902   | 3,000     | 18,000      | 81,481       | 67,868      |
| 1903   | 4,000     | 24,000      | 88,134       | 44,399      |
| 1904   | 7,500     | 45,000      | 106,437      | 47,635      |
| 1905   | 11,400    | 68,000      | 100,950      | 53,915      |
| 1906   | 7,500     | 49,500      | 103,450      | 55,115      |
| 1907   | 12,250    | 81,000      | 101,000      | 52,723      |
| 1908   | 28,412    | 189,560     | 60,903       | 49,194      |
| 1909   | 8,088     | 242,634     | 71,883       | 149,063     |
| 1910   | 8,744     | 212,538     | 313,392      | 159,451     |
| 1911   | 5,275     | 49,650      |              | 114,433     |
| 1912   | 6,128     | 64,874      |              | 145,166     |
| 1913   | 6,314     | 73,768      | 142,730      | 67,967      |
| 1914   | 5,793     | 82,890      | 154,872      | 25,900      |
| 1915   | 3,000     | 75,000      | 161,923      | 143,974     |
| 1916   | 10,189    | 158,722     | 182,441      | 141,605     |
| 1917   | also tile | 185,060     | 348,146      | 72,585      |
| 1918   |           | 305,475     | 202,453      | 60,405      |
| 1919   |           | 231,478     | 200,943      | 76,200      |
| 1920   |           |             | 200,433      | 74,957      |
| 1921   |           | 294,712     | 204,057      | 79,571      |
| 1922   |           |             | 199,389      | 62,454      |
| 1923   |           |             |              |             |
| 1924   | 14,936    | 462,688     |              |             |
| 1925   | also tile | 472,983     |              |             |
| 1926   | also tile | 511,448     |              |             |
| 1927   | also tile | 630,218     |              |             |
| 1928   | also tile | 512,425     |              |             |
| 1929   | also tile | 607,469     |              |             |
| 1930   | 11,858    | 478,454     |              |             |
| 1931   | also tile | 308,217     |              |             |
| 1932   |           |             |              |             |
| 1933   |           |             |              |             |
| 1934   |           |             |              |             |
| Totals |           | \$6,993,763 |              | \$2,284,635 |

<sup>1</sup> Production of manganese ore in California began at the Ladd Mine, San Joaquin County, in the Tesla District in 1867. When shipments of this ore to England ceased late in 1874, upwards of 5,000 tons had been produced by that property. Annual amounts earlier than 1894 are not separable.

<sup>2</sup> Estimated.

<sup>3</sup> See under 'Unapportioned.'

<sup>4</sup> Includes crushed rock, rubble, rip-rap, sand, gravel.

## SAN JOAQUIN COUNTY, 1885-1934

| Manganese |           | Miscellaneous stone, value | Miscellaneous and unapportioned |             |  |
|-----------|-----------|----------------------------|---------------------------------|-------------|--|
| Tons      | Value     |                            | Amount                          | Value       | Substance                                    |
| 1         |           |                            |                                 | \$2,500     | Gold.  |
| 55        | \$550     |                            | 275 tons                        | 343         | Pottery clay.                                |
| 280       | 2,800     |                            |                                 |             |  |
|           |           |                            |                                 |             |  |
|           |           |                            |                                 |             |  |
|           |           |                            |                                 |             |  |
|           |           |                            |                                 |             |  |
|           |           |                            | 273 tons                        | 2,730       | Asphalt.                                     |
|           |           |                            | 3 tons                          | 90          | Infusorial earth.                            |
|           |           | \$25,000                   |                                 |             |  |
|           |           |                            |                                 |             |  |
| 60        | 1,080     |                            | 2,000 tons                      | 13,000      | Clay.  |
| 260       | 4,160     |                            |                                 | 214,835     | Unapportioned, 1900-1909.                    |
|           |           |                            | 25,510 tons                     | 25,510      | Clay.  |
|           |           |                            |                                 |             |  |
|           |           |                            | 1,494 tons                      | 18,522      | Clay.  |
|           |           |                            | 3,000 tons                      | 4,000       | Glass sand.                                  |
|           |           |                            |                                 | 200         | Other minerals.                              |
|           |           |                            |                                 | 400         | Other minerals.                              |
| 150       | 1,500     | 19,440                     |                                 | 72          | Other minerals.                              |
| 460       | 7,400     | 21,620                     |                                 | 71,299      | Gold, platinum, silver.                      |
| 6,493     | 115,460   | 53,075                     |                                 | 71,538      | Gold, platinum, silver.                      |
| 6,320     | 157,500   | 55,003                     |                                 | 333,068     | Brick, gold, manganese, platinum, silver.    |
| 4,281     | 117,709   | 47,085                     |                                 | 23,530      | Other minerals.                              |
| 343       | 10,274    | 59,510                     |                                 | 314,269     | Bricks and clay.                             |
|           |           | 63,077                     |                                 | 96,672      | Manganese ore, miscellaneous stone.          |
| 425       | 3,750     | 72,815                     |                                 | 472,858     | Brick and clay.                              |
|           |           |                            |                                 | 77,774      | Manganese ore, natural gas.                  |
|           |           | 260,597                    |                                 | 55,938      | Manganese ore, natural gas.                  |
|           |           | 83,874                     |                                 | 161,598     | Other minerals.                              |
|           |           | 103,237                    |                                 | 201,515     | Other minerals.                              |
|           |           | 129,037                    |                                 |             |  |
|           |           | 81,747                     |                                 |             |  |
|           |           | 63,444                     |                                 | 49,062      | Unapportioned.                               |
|           |           | 135,317                    |                                 | 47,105      | Unapportioned.                               |
|           |           | 202,307                    |                                 | 44,101      | Unapportioned.                               |
|           |           | 119,729                    |                                 | 34,250      | Unapportioned.                               |
|           |           |                            | 6 oz.                           | 2           | Silver.                                      |
|           |           | 76,701                     |                                 | 1,440       | Gold.  |
|           |           |                            |                                 | 192,349     | Brick and natural gas.                       |
|           |           |                            | 4 oz.                           | 1           | Silver.                                      |
|           |           | 49,913                     |                                 | 1,017       | Gold.  |
|           |           |                            |                                 | 102,196     | Brick and hollow building tile, natural gas. |
|           |           |                            |                                 | 1,133       | Gold.  |
|           |           | 77,507                     | 3 oz.                           | 2           | Silver.                                      |
|           |           |                            |                                 | 69,455      | Brick and hollow building tile, natural gas. |
| *19,127   | \$422,183 | \$1,800,935                |                                 | \$2,704,474 |  |

## MINERAL PRODUCTION OF

| Year | Bituminous rock |           | Brick |         | Chromite |           | Gold,<br>value | Mineral water |         |
|------|-----------------|-----------|-------|---------|----------|-----------|----------------|---------------|---------|
|      | Tons            | Value     | M     | Value   | Tons*    | Value     |                | Gallons       | Value   |
| 1876 |                 |           |       |         |          |           |                |               |         |
| 1877 |                 |           |       |         |          |           |                |               |         |
| 1878 |                 |           |       |         |          |           |                |               |         |
| 1879 |                 |           |       |         |          |           |                |               |         |
| 1880 |                 |           |       |         | 17,030   | \$184,704 |                |               |         |
| 1881 |                 |           |       |         | 1,790    | 24,000    |                |               |         |
| 1882 |                 |           |       |         |          |           | \$5,000        |               |         |
| 1883 |                 |           |       |         | 5,558    | 99,200    |                |               |         |
| 1884 |                 |           |       |         |          |           |                |               |         |
| 1885 |                 |           |       |         | 670      | 8,880     |                |               |         |
| 1886 |                 |           |       |         | 980      | 13,140    | 9,164          |               |         |
| 1887 | 36,000          | \$180,000 |       |         | 600      | 7,980     | 1,740          |               |         |
| 1888 | 43,000          | 215,000   |       |         | 300      | 2,550     | 3,000          |               |         |
| 1889 |                 |           |       |         | 4,300    | 66,865    | 6,260          |               |         |
| 1890 |                 |           |       |         | 687      | 5,496     | 8,800          |               |         |
| 1891 |                 |           |       |         | 75       | 592       | 1,785          |               |         |
| 1892 |                 |           |       |         |          |           | 1,097          |               |         |
| 1893 |                 |           |       |         |          |           | 600            |               |         |
| 1894 | 9,432           | 32,263    |       |         | 800      | 10,500    | 1,200          |               |         |
| 1895 | 6,334           | 17,600    | 750   | \$3,750 | 700      | 6,650     | 3,000          |               |         |
| 1896 | 5,113           | 11,464    |       |         | 200      | 2,000     | 3,000          |               |         |
| 1897 | 2,291           | 5,117     |       |         |          |           | 2,500          | 7,800         | \$1,960 |
| 1898 | 4,788           | 18,927    | 830   | 5,280   |          |           | 1,000          | 800           | 400     |
| 1899 | 10,818          | 40,288    | 650   | 3,500   |          |           |                |               |         |
| 1900 | 3,346           | 12,905    | 500   | 4,000   |          |           |                |               |         |
| 1901 | 9,472           | 33,070    | 650   | 5,200   |          |           | 300            | 24,000        | 6,000   |
| 1902 | 1,790           | 2,327     | 900   | 7,650   |          |           | 2,399          | 4,500         | 800     |
| 1903 | 3,365           | 7,572     | 750   | 6,000   |          |           | 1,840          |               |         |
| 1904 |                 |           |       |         |          |           | 630            | 4,000         | 1,000   |
| 1905 | 2,533           | 6,348     | 400   | 3,200   |          |           | 300            |               |         |
| 1906 | 2,533           | 6,644     | 300   | 2,400   |          |           |                |               |         |
| 1907 | 2,167           | 8,128     | 2,000 | 16,000  |          |           | 316            | 4,800         | 1,000   |
| 1908 | 5,077           | 21,875    | 1,440 | 12,900  |          |           |                | 4,800         | 1,056   |
| 1909 | 2,731           | 6,369     | 2,245 | 19,605  |          |           |                | 4,000         | 1,000   |
| 1910 | 1,982           | 4,016     | 900   | 8,000   |          |           |                | 6,000         | 1,600   |
| 1911 | 2,710           | 5,230     | 2,000 | 18,000  |          |           |                | 2,000         | 1,000   |
| 1912 | 807             | 1,472     |       |         |          |           |                | 2,500         | 625     |
| 1913 | 609             | 1,149     | 1,750 | 17,500  |          |           | 124            | 1,500         | 600     |
| 1914 | 579             | 1,118     |       |         |          |           |                | 1,000         | 250     |
| 1915 |                 |           |       |         |          |           |                | 4,500         | 675     |
| 1916 |                 |           | 4,150 | 45,500  | 1,855    | 27,733    |                | 2,500         | 475     |
| 1917 |                 |           |       |         | 4,109    | 92,846    |                | 1,500         | 300     |
| 1918 |                 |           |       |         | 10,443   | 539,423   |                |               |         |
| 1919 |                 |           |       |         | 1,158    | 26,431    |                |               |         |
| 1920 |                 |           |       |         | 399      | 10,440    |                |               |         |
| 1921 |                 |           |       |         |          |           |                |               |         |
| 1922 |                 |           |       |         |          |           |                |               |         |
| 1923 |                 |           |       |         |          |           |                |               |         |
| 1924 |                 |           | 2,033 | 35,987  |          |           |                |               |         |
| 1925 |                 |           |       |         |          |           | 840            |               |         |

\* Copper was weighed in tons of 2,360 pounds and chromite in tons of 2,240 pounds, but here converted to 2,000 pounds.  
 † The total production of asphaltum up to 1894 was reported as 800 barrels. This production reduced to tons is shown under 1894.

‡ Although a great deal of chromic iron ore was mined and marketed during the '70's, there are no records of yearly production. The above figure for 1880 represents the total shipments from San Luis Obispo up to August, 1880.

§ There are no records of annual mineral production for the period of 1865-1876, but there was a small annual gold production from shallow placers before this, and these placers have no doubt yielded considerable gold never reported. The same observation applies to a number of small quicksilver properties worked in the '70's.

¶ Concentrates.

• Includes crushed rock, rubble, sand, gravel; also granite and sandstone prior to 1915.

• See under 'Unapportioned.'



[illegible]

† Flasks of 76½ pounds previous to June, 1904; of 75 pounds thence, through 1927; of 76 pounds since January, 1928.

MINERAL PRODUCTION OF

| Year   | Bituminous rock |           | Brick |           | Chromite |             | Gold,<br>value | Mineral water |          |
|--------|-----------------|-----------|-------|-----------|----------|-------------|----------------|---------------|----------|
|        | Tons            | Value     | M     | Value     | Tons*    | Value       |                | Gallons       | Value    |
| 1926   |                 |           |       |           | °        |             |                | °             |          |
| 1927   |                 |           |       |           |          |             |                |               |          |
| 1928   |                 |           | °     |           | °        |             | \$725          | °             |          |
| 1929   |                 |           |       | \$31,320  | °        |             | 1,267          | °             |          |
| 1930   |                 |           | °     |           | °        |             | 1,461          | °             |          |
| 1931   |                 |           | °     |           |          |             | 1,549          | °             |          |
| 1932   |                 |           |       |           |          |             | 1,021          | °             |          |
| 1933   |                 |           | °     |           | °        |             | 759            | °             |          |
| 1934   |                 |           | °     |           | °        |             | 1,946          | °             |          |
| Totals | °157,497        | \$638,882 | °     | \$245,792 | °51,653  | \$1,129,430 | \$63,623       | °76,200       | \$18,741 |

° Includes chromite, granite (tuff), marble, mineral water, petroleum, volcanic ash.  
° Includes brick and building tile, chromite, clay (pottery), granite (tuff), marble, mineral water, petroleum, volcanic ash.  
° Includes brick and building tile, granite (tuff), mineral water, volcanic ash, sandstone.  
° Includes brick, chromite, mineral water, petroleum, volcanic ash, miscellaneous stone.  
° Includes brick, granite (tuff), mineral water, volcanic ash, chromite, petroleum, sandstone.

SAN LUIS OBISPO COUNTY, 1876-1934—Continued

| Petroleum |           | Quicksilver |             | Miscellaneous<br>stone <sup>6</sup> ,<br>value | Miscellaneous and unapportioned |                    |  |
|-----------|-----------|-------------|-------------|--|---------------------------------|--------------------|--|
| Barrels   | Value     | Flasks      | Value       |  | Amount                          | Value              | Substance  |
| 27,982    | \$22,162  |             |             | \$193,138                                      |                                 | \$22,914<br>15,080 | Clay and clay products.<br>Chromite, mineral water, natural gas,<br>quicksilver. |
| 16,709    | 12,531    | 470         | \$53,600    | 195,631  |                                 | 33,268             | Brick, building tile (hollow), copper<br>mineral water, pumice.                  |
| 15,140    | 12,869    | 435         | 48,254      | 111,181  | 2 fine oz.                      | 1<br>44,095        | Silver.<br>Brick, building tile, chromite, min-<br>eral water.                   |
| "         |           | 1,076       | 120,995     | 11,061   | 2 fine oz.                      | 1<br>26,440        | Silver.<br>Other minerals. <sup>7</sup>  |
| "         |           | 1,306       | 157,440     | 28,659   | 3 fine oz.                      | 1<br>60,554        | Silver.<br>Other minerals. <sup>8</sup>  |
| 53,349    | 29,342    | 2,574       | 202,870     | 150,016  | 2 fine oz.                      | 1<br>16,357        | Silver.<br>Other minerals. <sup>9</sup>  |
| 66,744    | 36,709    | 2,035       | 106,508     | 105,075  | 3 fine oz.                      | 1<br>616           | Silver.<br>Mineral water, volcanic ash, sand-<br>stone.                          |
| "         |           | 285         | 15,759      | "  |                                 | 39,396             | Other minerals. <sup>10</sup>  |
| "         |           | 1,302       | 91,677      | 11,860   | 8 fine oz.                      | 5<br>32,965        | Silver.<br>Other minerals. <sup>11</sup>   |
| 675,687   | \$569,868 | 57,791      | \$2,965,488 | \$1,796,369                                    |                                 | \$1,863,362        |  |

## MINERAL PRODUCTION OF

| Year        | Salt    |             | Brick    |           |
|-------------|---------|-------------|----------|-----------|
|             | Tons    | Value       | M        | Value     |
| 1895.....   |         |             |          |           |
| 1896.....   |         |             |          |           |
| 1897.....   |         |             |          |           |
| 1898.....   |         |             | 1,140    | \$7,000   |
| 1899.....   |         |             | 2,870    | 24,225    |
| 1900.....   |         |             | 225      | 9,000     |
| 1901.....   | 40      | \$400       | 500      | 9,070     |
| 1902.....   | 6,500   | 16,000      | 200      | 8,000     |
| 1903.....   | 7,700   | 25,000      | 3,100    | 77,500    |
| 1904.....   | 12,000  | 62,500      | 3,902    | 56,436    |
| 1905.....   | 16,000  | 67,500      | 5,902    | 61,436    |
| 1906.....   | 14,900  | 44,920      | 6,613    | 67,000    |
| 1907.....   | 14,000  | 56,000      | 8,078    | 86,285    |
| 1908.....   | 23,800  | 60,900      | 4,494    | 63,231    |
| 1909.....   | 22,100  | 95,400      | 1,346    | 38,405    |
| 1910.....   | 26,000  | 64,750      | 1,350    | 37,250    |
| 1911.....   | 27,500  | 55,000      | 1,350    | 43,000    |
| 1912.....   | 33,000  | 80,000      | 1,400    | 40,500    |
| 1913.....   | 28,000  | 72,250      | 1,418    | 44,680    |
| 1914.....   | 27,500  | 76,750      | 950      | 24,074    |
| 1915.....   | 25,500  | 63,750      | 715      | 19,550    |
| 1916.....   | 28,540  | 70,807      | 986      | 38,121    |
| 1917.....   | 36,483  | 114,689     |          |           |
| 1918.....   | 26,434  | 144,604     |          |           |
| 1919.....   | 30,238  | 136,190     |          |           |
| 1920.....   | 37,409  | 206,897     |          |           |
| 1921.....   | 32,587  | 167,022     |          |           |
| 1922.....   | 32,428  | 149,302     |          |           |
| 1923.....   | 35,757  | 199,192     |          |           |
| 1924.....   | 54,258  | 205,176     |          |           |
| 1925.....   | 31,325  | 155,925     |          |           |
| 1926.....   |         |             |          |           |
| 1927.....   |         |             |          |           |
| 1928.....   |         |             |          |           |
| 1929.....   |         |             |          |           |
| 1930.....   |         |             |          |           |
| 1931.....   |         |             |          |           |
| 1932.....   |         |             |          |           |
| 1933.....   |         |             |          |           |
| 1934.....   |         |             |          |           |
| Totals..... | 630,089 | \$2,360,924 | \$46,539 | \$754,763 |

<sup>1</sup> The limestone produced in San Mateo County is used as crushed rock and is included under Stone Industry. Previous to 1915 it was erroneously classified as industrial limestone and tabulated under that heading.

<sup>2</sup> Includes crushed rock, rubble, sand, gravel.

<sup>3</sup> See under 'Unapportioned.'

<sup>4</sup> Includes shells dredged from San Francisco Bay, see under 'Unapportioned.'

## SAN MATEO COUNTY, 1895-1934

| Limestone |           | Miscellaneous stone, value | Miscellaneous and unapportioned |              |  |
|-----------|-----------|----------------------------|---------------------------------|--------------|--|
| Tons      | Value     |                            | Amount                          | Value        | Substance  |
|           |           |                            | 5,000 tons                      | \$5,000      | Clay.  |
|           |           |                            | 1,000 bbls.                     | 1,250        | Petroleum.   |
|           |           |                            | 500 bbls.                       | 1,250        | Cement.  |
|           |           | \$40,000                   |                                 |              |  |
|           |           | 70,000                     |                                 |              |  |
|           |           | 34,000                     |                                 |              |  |
|           |           | 7,500                      |                                 |              |  |
|           |           | 6,000                      | 17 tons                         | 255          | Asphalt.   |
|           |           | 301,120                    | 5,000 tons                      | 5,625        | Clay.  |
|           |           | 150,000                    |                                 |              |  |
|           |           | 113,866                    | 3,000 bbls.                     | 6,000        | Petroleum.   |
|           |           | 75,000                     |                                 |              |  |
|           |           | 111,823                    |                                 |              |  |
|           |           | 2,111                      |                                 |              |  |
| 37,687    | \$17,451  | 89,142                     |                                 |              |  |
| 120,306   | 96,245    | 90,221                     |                                 | 500          | Gems.  |
| 111,382   | 89,106    | 88,766                     |                                 |              |  |
| 93,500    | 74,800    | 61,185                     |                                 |              |  |
| 102,300   | 66,495    | 29,587                     |                                 |              |  |
| 138,544   | 78,506    | 18,635                     |                                 |              |  |
| 153,329   | 75,941    | 34,648                     | 81,000 tons                     | 34,120       | Gems.  |
|           |           |                            | 6,581 bbls.                     | 845          | Sandstone.   |
|           |           |                            |                                 | 200          | Lime.  |
|           |           |                            |                                 | 100          | Gems.  |
|           |           | 93,391                     |                                 | 1,100        | Gems.  |
|           |           |                            | 593 tons                        | 732          | Other minerals.  |
|           |           | 25,663                     |                                 | 85           | Pottery clay.  |
|           |           |                            |                                 | 150          | Gems.  |
|           |           | 71,668                     |                                 | 20,656       | Gems.  |
|           |           | 34,164                     |                                 | 15,044       | Brick and tile, magnesium chloride, potash.                            |
|           |           | 42,235                     |                                 | 63,246       | Magnesium chloride, potash.  |
|           |           | 46,040                     | 322 bbls.                       | 966          | Other minerals.  |
|           |           |                            | 322 bbls.                       | 39,200       | Petroleum.   |
|           |           | 61,697                     |                                 | 966          | Magnesium salts, potash.   |
|           |           | 60,009                     |                                 | 27,407       | Petroleum.   |
|           |           | 96,815                     |                                 | 34,984       | Brick, magnesium chloride, potash.                                     |
|           |           | 75,078                     |                                 | 33,809       | Magnesium salts, petroleum, potash.                                    |
|           |           |                            |                                 | 21,917       | Magnesium chloride, petroleum, potash.                                 |
|           |           | 90,757                     |                                 | 1,330,831    | Gems, magnesium chloride, petroleum, potash.                           |
|           |           | 77,470                     |                                 | 1,816,383    | Cement, gems, magnesium chloride, natural gas, petroleum, potash.      |
|           |           | 129,802                    |                                 | 1,734,036    | Cement, magnesium chloride, natural gas, petroleum, salt.              |
|           |           | 251,602                    |                                 | 3,076,971    | Cement, limestone, natural gas, petroleum, salt.                       |
|           |           | 278,839                    |                                 | 3,393,940    | Cement, limestone, mangesium, carbonate, natural gas, petroleum, salt. |
|           |           | 340,490                    |                                 | 2,159,447    | Cement, limestone, magnesium carbonate, natural gas, salt.             |
|           |           | 219,715                    |                                 | 2,010,794    | Cement, limestone, magnesium carbonate, natural gas, salt.             |
|           |           | 169,689                    |                                 | 1,173,761    | Cement, limestone, magnesium carbonate, natural gas, salt.             |
|           |           | 75,752                     |                                 | 1,493,728    | Cement, limestone, magnesium carbonate, natural gas, salt.             |
|           |           | 24,000                     |                                 | 1,538,490    | Cement, limestone, magnesium carbonate, natural gas, petroleum, salt.  |
| \$757,048 | \$498,544 | \$3,587,760                |                                 | \$20,043,988 |  |

## MINERAL PRODUCTION OF

| Year   | Lime       |             | Limestone |           |
|--------|------------|-------------|-----------|-----------|
|        | Barrels    | Value       | Tons      | Value     |
| 1894   | 167,000    | \$138,200   | 4,000     | \$5,000   |
| 1895   | 145,000    | 133,750     | 12,055    | 12,055    |
| 1896   | 116,000    | 95,500      | 27,827    | 28,663    |
| 1897   | 149,600    | 111,800     | 10,688    | 8,005     |
| 1898   | 151,000    | 151,000     | 7,912     | 5,738     |
| 1899   | 161,893    | 176,893     | 4,135     | 3,730     |
| 1900   | 163,985    | 131,288     | 1,669     | 1,213     |
| 1901   | 161,500    | 161,500     | 3,845     | 3,595     |
| 1902   | 185,223    | 161,302     | 1,850     | 1,850     |
| 1903   | 220,835    | 185,442     | 3,000     | 2,725     |
| 1904   | 293,207    | 306,775     | "         | "         |
| 1905   | 218,084    | 199,974     | 7,325     | 52,125    |
| 1906   | 255,469    | 347,490     | 11,431    | 55,242    |
| 1907   | 213,599    | 241,179     | 6,370     | 6,000     |
| 1908   | 119,996    | 119,996     | 1,178     | 2,167     |
| 1909   | 228,875    | 296,785     | 3,457     | 5,273     |
| 1910   | 214,137    | 230,513     | 4,361     | 6,770     |
| 1911   | 216,508    | 206,225     | 22,622    | 44,591    |
| 1912   | 169,646    | 159,505     | 7,307     | 7,553     |
| 1913   | 75,000     | 60,000      | 39,494    | 30,994    |
| 1914   | 173,282    | 157,011     | 14,666    | 25,082    |
| 1915   | 191,643    | 177,873     | 2,047     | 4,873     |
| 1916   | 176,263    | 225,485     | 4,318     | 9,820     |
| 1917   | 213,104    | 173,778     | 6,527     | 11,378    |
| 1918   | 182,083    | 285,316     | 7,132     | 15,313    |
| 1919   | 150,271    | 234,039     | 5,527     | 12,690    |
| 1920   | 141,633    | 202,908     | 5,062     | 20,101    |
| 1921   | 122,907    | 242,860     | "         | "         |
| 1922   | 174,490    | 235,802     | 4,581     | 20,534    |
| 1923   | 157,660    | 203,632     | 6,733     | 14,242    |
| 1924   | 127,830    | 212,540     | "         | "         |
| 1925   | 165,340    | 224,724     | 16,551    | 33,102    |
| 1926   | 154,570    | 227,904     | "         | "         |
| 1927   | 134,310    | 173,207     | 16,717    | 38,045    |
| 1928   | 121,290    | 135,991     | 8,600     | 24,849    |
| 1929   | 100,750    | 112,761     | 15,143    | 40,756    |
| 1930   | "          | "           | 11,405    | 46,925    |
| 1931   | "          | "           | 9,383     | 34,430    |
| 1932   | "          | "           | 6,330     | 15,292    |
| 1933   | "          | "           | 6,413     | 22,587    |
| 1934   | "          | "           | "         | "         |
| Totals | 26,113,983 | \$6,606,998 | 327,661   | \$870,577 |

\* Includes crushed rock, rubble, sand, gravel.

\* See under "Unapportioned."

## SANTA CRUZ COUNTY, 1894-1934

| Bituminous rock |             | Miscellaneous stone <sup>1</sup> , value | Miscellaneous and unapportioned |              |           |
|-----------------|-------------|--|---------------------------------|--------------|-----------|
| Tons            | Value       |  | Amount                          | Value        | Substance |
| 20,782          | \$79,980    |  |                                 |              |           |
| 32,067          | 102,486     | \$4,000                                  | 75 M                            | \$375        | Brick.    |
| 43,843          | 109,536     | 4,000                                    | 497 M                           | 2,485        | Brick.    |
| 43,179          | 123,056     |  | 300 M                           | 1,500        | Brick.    |
| 40,598          | 113,898     |  |                                 |              |           |
| 27,503          | 70,569      | 200                                      |                                 |              |           |
| 21,960          | 58,590      |  |                                 |              |           |
| 13,580          | 30,654      |  | 10 tons                         | 30           | Clay.     |
| 31,700          | 41,084      |  | 106 tons                        | 1,060        | Asphalt.  |
| 18,426          | 45,190      | 20,750                                   | 700 cu.ft.                      | 140          | Granite.  |
|                 |             | 2,925                                    |                                 |              |           |
| 17,583          | 42,500      | 1,750                                    |                                 |              |           |
| 13,544          | 38,860      | 3,500                                    |                                 |              |           |
| 21,955          | 64,707      | 14,800                                   |                                 |              |           |
| 25,041          | 85,123      | 19,736                                   |                                 |              |           |
| 31,392          | 110,067     | 20,717                                   |                                 |              |           |
| 35,565          | 124,195     | 23,425                                   |                                 |              |           |
| 24,815          | 80,371      | 7,627                                    |                                 |              |           |
| 32,146          | 80,439      | 22,710                                   |                                 |              |           |
| 26,932          | 67,330      | 10,511                                   |                                 |              |           |
| 40,540          | 115,500     | 4,276                                    |                                 |              |           |
| 17,399          | 60,728      | 6,794                                    |                                 |              |           |
| "               |             | 2,815                                    |                                 |              |           |
| "               |             | 2,368                                    |                                 |              |           |
| "               |             | 9,107                                    |                                 |              |           |
| "               |             | 17,074                                   |                                 |              |           |
| "               |             | 23,379                                   |                                 |              |           |
| "               |             | 22,895                                   |                                 |              |           |
| "               |             | 7,398                                    |                                 |              |           |
| "               |             | 15,363                                   |                                 |              |           |
| "               |             | 29,217                                   |                                 |              |           |
| "               |             | 21,125                                   |                                 |              |           |
| "               |             | 26,361                                   |                                 |              |           |
| "               |             | 45,570                                   |                                 |              |           |
|                 |             | 62,571                                   |                                 |              |           |
|                 |             | 75,250                                   |                                 |              |           |
|                 |             | 79,218                                   |                                 |              |           |
|                 |             | 98,881                                   |                                 |              |           |
|                 |             | 34,253                                   |                                 |              |           |
|                 |             | 14,120                                   |                                 |              |           |
|                 |             |  | 3 oz.                           |              |           |
|                 |             | 84,744                                   |                                 |              |           |
|                 |             |  | 2 oz.                           |              |           |
| \$580,550       | \$2,225,363 | \$819,430                                |                                 | \$60,581,461 |           |





## MINERAL PRODUCTION OF SIERRA COUNTY, 1880-1934

| Year        | Gold,<br>value | Silver,<br>value | Miscel-<br>laneous<br>stone <sup>1</sup> ,<br>value | Miscellaneous and unapportioned |          |                 |
|-------------|----------------|------------------|---|---------------------------------|----------|-----------------|
|             |                |                  |   | Amount                          | Value    | Substance       |
| 1880.....   | \$974,332      | \$576            |   |                                 |          |                 |
| 1881.....   | 950,000        | 6,000            |   |                                 |          |                 |
| 1882.....   | 1,100,000      |                  |   |                                 |          |                 |
| 1883.....   | 1,075,000      |                  |   |                                 |          |                 |
| 1884.....   | 1,177,349      | 145              |   |                                 |          |                 |
| 1885.....   | 1,433,881      | 11               |   |                                 |          |                 |
| 1886.....   | 1,967,152      | 2,414            |   |                                 |          |                 |
| 1887.....   | 1,502,469      | 202              |   |                                 |          |                 |
| 1888.....   | 1,250,000      | 1,500            |   |                                 |          |                 |
| 1889.....   | 1,446,486      | 1,222            |   |                                 |          |                 |
| 1890.....   | 733,528        | 2,039            |   |                                 |          |                 |
| 1891.....   | 701,702        | 811              |   |                                 |          |                 |
| 1892.....   | 688,464        | 26               |   |                                 |          |                 |
| 1893.....   | 839,343        | 46               |   |                                 |          |                 |
| 1894.....   | 604,722        |                  |   |                                 |          |                 |
| 1895.....   | 694,470        | 107              |   |                                 |          |                 |
| 1896.....   | 786,175        | 424              |   |                                 |          |                 |
| 1897.....   | 370,208        | 46               |   |                                 |          |                 |
| 1898.....   | 399,063        | 519              |   |                                 |          |                 |
| 1899.....   | 450,115        | 359              |   |                                 |          |                 |
| 1900.....   | 659,696        | 3,463            |   |                                 |          |                 |
| 1901.....   | 575,427        | 755              |   |                                 |          |                 |
| 1902.....   | 326,155        | 311              |   | 24,000 gals.                    | \$6,000  | Mineral water.  |
| 1903.....   | 310,770        | 476              |   |                                 |          |                 |
| 1904.....   | 374,763        | 1,222            |   |                                 |          |                 |
| 1905.....   | 517,303        | 3,687            |   |                                 |          |                 |
| 1906.....   | 409,366        | 2,518            |   |                                 |          |                 |
| 1907.....   | 483,904        | 2,621            |   | 120,000 gals.                   | 12,000   | Mineral water.  |
| 1908.....   | 412,626        | 1,917            |   |                                 |          |                 |
| 1909.....   | 189,672        | 957              |   |                                 |          |                 |
| 1910.....   | 312,035        | 1,330            |   |                                 |          |                 |
| 1911.....   | 461,513        | 5,604            |   |                                 |          |                 |
| 1912.....   | 732,988        | 2,777            |   | 1,285 lbs.                      | 212      | Copper.         |
| 1913.....   | 1,006,573      | 4,305            |   | 9,919 lbs.                      | 446      | Lead.           |
| 1914.....   | 730,000        | 3,000            |   | 2,228 lbs.                      | 98       | Lead.           |
| 1915.....   | 726,362        | 3,156            |   |                                 |          |                 |
| 1916.....   | 724,256        | 3,291            |   |                                 | 1,950    | Other minerals. |
| 1917.....   | 384,428        | 1,629            |   | 13,031 lbs.                     | 3,558    | Copper.         |
| 1918.....   | 289,368        | 2,121            |   | 807 tons                        | 40,012   | Chromite.       |
| 1919.....   | 301,172        | 2,957            | \$750   |                                 |          |                 |
| 1920.....   | 442,894        | 3,967            |   |                                 |          |                 |
| 1921.....   | 612,267        | 5,236            | 2,858   |                                 |          |                 |
| 1922.....   | 1,753,242      | 14,484           | 2,900   |                                 |          |                 |
| 1923.....   | 878,164        | 6,134            | 2,312   |                                 |          |                 |
| 1924.....   | 799,276        | 5,198            | 8,000   |                                 | 2        | Other minerals. |
| 1925.....   | 1,373,705      | 8,919            | 3,677   |                                 |          |                 |
| 1926.....   | 564,452        | 2,913            | 2,150   |                                 |          |                 |
| 1927.....   | 678,873        | 3,350            | 70,300  |                                 | 10       | Other minerals. |
| 1928.....   | 674,855        | 3,614            | 1,433   |                                 | 24       | Unapportioned.  |
| 1929.....   | 367,396        | 1,783            | 21,223  |                                 |          |                 |
| 1930.....   | 589,249        | 1,056            | 15,265  |                                 | 15       | Unapportioned.  |
| 1931.....   | 651,754        | 1,661            | 37,500  |                                 |          |                 |
| 1932.....   | 590,294        | 2,268            | 12,965  | 5,395 lbs.                      | 340      | Copper.         |
| 1933.....   | 445,102        | 1,173            | 2,833   | 69,490 lbs.                     | 2,005    | Lead.           |
| 1934.....   | 1,027,582      | 4,546            | 14,040  | 599 lbs.                        | 38       | Copper.         |
|             |                |                  |   | 757 lbs.                        | 61       | Copper.         |
|             |                |                  |   | 2,104 lbs.                      | 78       | Lead.           |
| Totals..... | \$40,521,941   | \$130,846        | \$198,456   |                                 | \$76,849 |                 |

Includes crushed rock, macadam, ballast, rubble, rip-rap, sand, gravel.

## MINERAL PRODUCTION OF

| Year | Gold,<br>value | Silver,<br>value | Chromite |         | Mineral water |          |
|------|----------------|------------------|----------|---------|---------------|----------|
|      |                |                  | Tons     | Value   | Gallons       | Value    |
| 1880 | \$440,735      | \$95,340         |          |         |               |          |
| 1881 | 850,000        | 1,500            |          |         |               |          |
| 1882 | 720,000        |                  |          |         |               |          |
| 1883 | 400,000        |                  |          |         |               |          |
| 1884 | 475,000        |                  |          |         |               |          |
| 1885 | 338,659        |                  |          |         |               |          |
| 1886 | 342,677        | 64               |          |         |               |          |
| 1887 | 606,859        | 177              |          |         |               |          |
| 1888 | 625,000        |                  |          |         |               |          |
| 1889 | 915,294        | 370              |          |         |               |          |
| 1890 | 860,303        | 23               |          |         |               |          |
| 1891 | 957,220        | 120              |          |         |               |          |
| 1892 | 1,013,332      | 56               |          |         |               |          |
| 1893 | 799,108        |                  |          |         |               |          |
| 1894 | 760,782        |                  |          |         |               |          |
| 1895 | 950,006        | 177              |          |         | 200,000       | \$80,800 |
| 1896 | 1,091,265      | 653              |          |         | "             | "        |
| 1897 | 842,123        | 34               |          |         | "             | "        |
| 1898 | 768,804        | 321              |          |         | "             | "        |
| 1899 | 991,771        | 100              |          |         | "             | "        |
| 1900 | 951,397        | 16,700           |          |         | 700,000       | 45,000   |
| 1901 | 886,043        | 12,980           |          |         | 700,000       | 175,000  |
| 1902 | 906,989        | 233              |          |         | 750,000       | 187,500  |
| 1903 | 613,576        | 22               |          |         | 750,000       | 50,000   |
| 1904 | 892,685        | 1,230            |          |         | 750,000       | 50,000   |
| 1905 | 803,035        | 2,499            |          |         | "             | "        |
| 1906 | "              | "                |          |         | "             | "        |
| 1907 | 398,017        | 3,037            |          |         | 725,000       | 36,250   |
| 1908 | 504,156        | 6,125            |          |         | 700,000       | 80,000   |
| 1909 | 416,160        | 2,145            |          |         | 500,000       | 10,000   |
| 1910 | 437,376        | 2,322            |          |         | 500,000       | 60,000   |
| 1911 | 422,297        | 2,561            |          |         | 700,000       | 120,000  |
| 1912 | 472,314        | 2,980            | 220      | \$2,310 | 700,000       | 120,000  |
| 1913 | 180,125        | 1,228            |          |         | 700,000       | 120,000  |
| 1914 | 312,842        | 1,026            |          |         | 650,000       | 65,000   |
| 1915 | 426,716        | 2,081            | "        |         | 626,680       | 62,990   |
| 1916 | 441,307        | 2,312            | 2,251    | 28,731  | 502,650       | 50,530   |
| 1917 | 325,550        | 16,883           | 2,046    | 49,797  | 503,000       | 50,600   |
| 1918 | 294,227        | 14,501           | 6,612    | 336,588 | 501,750       | 50,175   |
| 1919 | 226,525        | 17,049           | 510      | 13,379  | 451,500       | 90,375   |
| 1920 | 80,707         | 5,218            | 215      | 5,732   | 300,150       | 60,015   |
| 1921 | 42,635         | 294              | "        |         | 250,150       | 5,015    |
| 1922 | 75,105         | 612              |          |         |               |          |
| 1923 | 45,633         | 298              |          |         | 200,150       | 4,042    |
| 1924 | 63,570         | 296              |          |         |               | 6,100    |

| Platinum group metals |       | Miscellaneous stone <sup>1</sup> , value | Miscellaneous and unapportioned   |  |   |
|-----------------------|-------|--|---|--|---|
| Ounces                | Value |  | Amount  | Value  | Substance   |
| 100                   | \$600 |  |   |  |   |
|                       |       |  |   | \$1,202,742  | Unapportioned, 1900-1909  |
|                       |       |  | 200 lbs.  | 23   | Copper  |
| 1.6                   | 21    |  |   |  |   |
| 5.3                   | 93    |  |   |  |   |
|                       |       | \$39,000                                 | 2,500 cu. ft.<br>2,500 cu. ft.<br>193 lbs.<br>2,643 lbs.<br>11,433 cu. ft.<br>1,000 bbls.<br>220 tons<br>4,949 lbs.<br>1,800 cu. ft.<br>1,090 lbs.<br>3,360 lbs.<br>50 tons | 1,250<br>1,500<br>39<br>140<br>12,897<br>1,000<br>300<br>1,183<br>1,485<br>1,680<br>144<br>500 | Sandstone.<br>Sandstone.<br>Copper.<br>Lead.<br>Sandstone.<br>Lime.<br>Limestone.<br>Lead.<br>Sandstone.<br>Lime.<br>Lead.<br>Pumice. |
|                       |       | 5,028                                    | 1,050 cu. ft.<br>100 bbls.<br>2,225 tons  | 1,750<br>300<br>2,200  | Sandstone.<br>Lime.<br>Limestone.   |
|                       |       | 9,475                                    | 1,204 cu. ft.<br>335 bbls.<br>35 tons   | 2,000<br>735<br>525  | Gems.<br>Sandstone.<br>Lime.<br>Limestone.  |
|                       |       | 6,580                                    | 150 bbls.<br>24 tons<br>650 cu. ft.<br>250 cu. ft.  | 120<br>24<br>455<br>250  | Gems.<br>Lime.<br>Limestone.<br>Sandstone.  |
|                       |       | 609                                      |   | 250  | Gems.   |
|                       |       | 4,883                                    | 90 tons   | 2,000  | Gems.   |
|                       |       |  |   | 1,500  | Pumice.   |
|                       |       |  |   | 500  | Other minerals.   |
| 9                     | 304   | 5,371                                    | 100 tons<br>58 lbs.<br>677 bbls.<br>250 cu. ft.<br>188 lbs.   | 2<br>629<br>150<br>9   | Coal.<br>Lead.<br>Lime.<br>Sandstone.<br>Lead.  |
|                       |       | 4,630                                    | 745 bbls.   | 745  | Lime.   |
|                       |       | 45,407                                   |   | 16,923   | Chromite, copper, marble, sandstone.  |
|                       |       | 134,382                                  | 888,043 lbs.<br>192 lbs.  | 12,609<br>500  | Copper, building stone, lime, platinum, sandstone.<br>Granite.  |
| 15                    | 709   |  |   | 242,436  | Copper.   |
|                       |       |  |   | 17   | Lead.   |
|                       |       |  |   | 8,535  | Lime, sandstone, soda.  |
| 1                     | 58    | 24,588                                   | 573,593 lbs.  | 141,677  | Copper.   |
|                       |       |  |   | 15,473   | Lead and pumice.  |
| 7                     | 1,015 | 26,405                                   |   | 111,294  | Copper, limestone, pumice, quicksilver.   |
|                       |       | 30,322                                   |   | 47,121   | Copper, lime, limestone, potash, pumice, quicksilver.   |
|                       |       | 44,343                                   |   | 1,060  | Asbestos, brick, chromite, lime, platinum.  |
|                       |       | 21,726                                   |   | 4,020  | Other minerals. <sup>5</sup>  |
| 3                     | 339   | 129,291                                  |   | 1,408  | Other minerals. <sup>6</sup>  |
|                       |       | 67,787                                   |   | 3,034  | Other minerals. <sup>7</sup>  |

MINERAL PRODUCTION OF

| Year   | Gold,<br>value | Silver,<br>value | Chromite |           | Mineral water |             |
|--------|----------------|------------------|----------|-----------|---------------|-------------|
|        |                |                  | Tons     | Value     | Gallons       | Value       |
| 1925   | \$180,120      | \$831            |          |           |               |             |
| 1926   | 141,240        | 709              |          |           |               |             |
| 1927   | 138,822        | 586              |          |           |               |             |
| 1928   | 85,717         | 421              |          |           |               |             |
| 1929   | 63,843         | 863              |          |           |               |             |
| 1930   | 70,332         | 4,172            |          |           |               |             |
| 1931   | 74,326         | 169              |          |           |               |             |
| 1932   | 133,115        | 304              |          |           |               |             |
| 1933   | 324,954        | 686              |          |           |               |             |
| 1934   | 528,395        | 1,861            |          |           |               |             |
| Totals | \$26,708,789   | \$204,169        | 11,854   | \$436,537 | *12,361,030   | \$1,579,392 |

<sup>1</sup> Includes crushed rock, rubble, rip-rap, sand, gravel.  
<sup>2</sup> Recalculated to 'commercial,' from 'coining value' as originally published.  
<sup>3</sup> See under 'Unapportioned.'  
<sup>4</sup> Production from dredging operations included in Stanislaus County production.

SISKIYOU COUNTY, 1880-1934—Continued

| Platinum group metals |         | Miscellaneous stone <sup>1</sup> , value | Miscellaneous and unapportioned |             |  |
|-----------------------|---------|--|---------------------------------|-------------|--|
| Ounces                | Value   |  | Amount                          | Value       | Substance  |
|                       |         | \$23,800                                 | {                               | \$3,535     | Lime and limestone.  |
|                       |         | 327,569                                  |                                 | 11,340      | Mineral water, platinum, sandstone.  |
| 16                    | \$1,780 | 102,428                                  |                                 | 22,853      | Coal, lead, mineral water, sandstone.  |
| 10                    | 690     | 370,833                                  |                                 | 56,420      | Mineral water, sandstone.  |
|                       |         | 110,878                                  |                                 | 14,195      | Copper, lead, gems (rhodonite), mineral water.                                   |
|                       |         | 85,851                                   |                                 | 54,205      | Copper, lead, limestone, quicksilver, mineral water.                             |
|                       |         |  |                                 | 75,046      | Copper, lead, granite, mineral water, gems, platinum, quicksilver, lime, pumice. |
|                       |         |  |                                 | 32,740      | Other minerals.  |
|                       |         | 79,772                                   |                                 | 27,185      | Lead, quicksilver, mineral water.  |
|                       |         | 23,415                                   |                                 | 19,502      | Copper, lead, mineral water, pumice.   |
|                       |         | 29,036                                   |                                 | 50,694      | Copper, lead, mineral water, pumice, tube mill pebbles.                          |
|                       |         | 67,216                                   |                                 |             |  |
| 167.9                 | \$5,609 | \$1,780,625                              |                                 | \$2,228,844 |  |

<sup>1</sup>Includes limestone and mineral water.  
<sup>2</sup>Includes lead and lime.  
<sup>3</sup>Includes coal, limestone, lime and platinum.

## MINERAL PRODUCTION OF

| Year   | Quicksilver |             | Mineral water |           | Lime and limestone |           |
|--------|-------------|-------------|---------------|-----------|--------------------|-----------|
|        | Flasks      | Value       | Gallons       | Value     | Tons               | Value     |
| 1873   | 1,800       | \$144,594   |               |           |                    |           |
| 1874   | 1,900       | 199,842     |               |           |                    |           |
| 1875   | 2,100       | 176,715     |               |           |                    |           |
| 1876   | 1,683       | 74,052      |               |           |                    |           |
| 1877   | 1,463       | 54,570      |               |           |                    |           |
| 1878   | 802         | 26,386      |               |           |                    |           |
| 1879   | 1,290       | 38,507      |               |           |                    |           |
| 1880   | 492         | 15,252      |               |           |                    |           |
| 1881   |             |             |               |           |                    |           |
| 1882   |             |             |               |           |                    |           |
| 1883   |             |             |               |           |                    |           |
| 1884   |             |             |               |           |                    |           |
| 1885   |             |             |               |           |                    |           |
| 1886   |             |             |               |           |                    |           |
| 1887   |             |             |               |           |                    |           |
| 1888   |             |             |               |           |                    |           |
| 1889   |             |             |               |           |                    |           |
| 1890   |             |             |               |           |                    |           |
| 1891   |             |             |               |           |                    |           |
| 1892   |             |             |               |           |                    |           |
| 1893   |             |             |               |           |                    |           |
| 1894   |             |             |               |           | 6,400              | \$8,000   |
| 1895   |             |             |               |           | 4,300              | 4,635     |
| 1896   |             |             | 3,094         | \$1,547   | 5,477              | 5,989     |
| 1897   |             |             |               |           | 9,608              | 9,801     |
| 1898   |             |             |               |           | 6,125              | 5,570     |
| 1899   |             |             | 20,000        | 4,000     |                    | 356       |
| 1900   |             |             | 20,000        | 4,000     | 1,800              | 1,800     |
| 1901   |             |             | 17,800        | 4,450     |                    | 5,950     |
| 1902   | 42          | 1,890       | 10,000        | 4,000     |                    |           |
| 1903   | 100         | 4,100       | 10,000        | 4,000     |                    |           |
| 1904   | 377         | 15,080      | 10,000        | 4,000     |                    |           |
| 1905   | 542         | 18,518      | 10,000        | 4,000     | 100,000            | 100,000   |
| 1906   | 528         | 19,272      | 4,000         | 4,000     |                    |           |
| 1907   | 640         | 24,422      | 40,000        | 4,000     |                    |           |
| 1908   | 764         | 33,294      | 140,000       | 11,600    |                    |           |
| 1909   |             |             | 32,650        | 5,490     |                    |           |
| 1910   |             |             | 32,400        | 3,960     |                    |           |
| 1911   |             |             | 30,000        | 4,000     |                    |           |
| 1912   |             |             | 285,050       | 44,000    |                    |           |
| 1913   |             |             | 23,600        | 3,440     |                    |           |
| 1914   | 320         | 15,696      | 43,020        | 5,208     | 86,128             | 86,128    |
| 1915   |             |             | 64,200        | 8,000     |                    |           |
| 1916   | 660         | 61,710      | 11,200        | 3,750     |                    |           |
| 1917   | 554         | 52,765      | 10,960        | 2,580     |                    |           |
| 1918   | 593         | 59,122      | 11,440        | 2,722     |                    |           |
| 1919   |             |             |               |           |                    |           |
| 1920   |             |             |               |           |                    |           |
| 1921   |             |             |               |           |                    |           |
| 1922   |             |             |               |           |                    |           |
| 1923   |             |             |               |           |                    |           |
| 1924   |             |             |               |           |                    |           |
| 1925   |             |             |               |           |                    |           |
| 1926   |             |             |               |           |                    |           |
| 1927   |             |             |               |           |                    |           |
| 1928   |             |             |               |           |                    |           |
| 1929   |             |             |               |           |                    |           |
| 1930   |             |             |               |           |                    |           |
| 1931   |             |             |               |           |                    |           |
| 1932   |             |             |               |           |                    |           |
| 1933   |             |             |               |           |                    |           |
| 1934   |             |             |               |           |                    |           |
| Totals | 16,650      | \$1,035,787 | 829,324       | \$132,747 | 219,838            | \$228,229 |

<sup>1</sup> Includes crushed rock, rubble, paving blocks, sand, gravel.

<sup>2</sup> Flasks of 76½ pounds previous to June, 1904; of 75 pounds thence, through 1927; of 76 pounds since January, 1928.

<sup>3</sup> See under 'Unapportioned.'

| Miscellaneous stone <sup>1</sup> , value | Natural gas, value | Miscellaneous and unapportioned |              |  |
|--|--------------------|---------------------------------|--------------|--|
|  |                    | Amount                          | Value        | Substance  |
|  |                    |                                 |              |  |
|  |                    |                                 |              |  |
|  |                    |                                 |              |  |
|  |                    |                                 |              |  |
|  |                    |                                 |              |  |
|  |                    |                                 |              |  |
|  |                    |                                 |              |  |
|  |                    |                                 |              |  |
|  |                    |                                 |              |  |
|  |                    |                                 |              |  |
| \$225                                    |                    |                                 |              |  |
| 19,650                                   |                    |                                 |              |  |
| 15,752                                   |                    | 75 tons                         | \$125        | Pottery clay.  |
| 20,975                                   |                    | 400 tons                        | 500          | Pottery clay.  |
| 15,065                                   |                    |                                 |              |  |
| 12,181                                   |                    |                                 |              |  |
| 18,900                                   |                    |                                 |              |  |
| 2,200                                    |                    |                                 |              |  |
| 14,250                                   |                    | 75,000 bbls.                    | 150,000      | Cement.  |
| 21,514                                   |                    | 250,000 bbls.                   | 375,000      | Cement.  |
| 11,113                                   |                    |                                 |              |  |
| 78,573                                   |                    |                                 |              |  |
| 143,487                                  |                    |                                 |              |  |
| 202,146                                  | \$6,584            | 125 tons                        | 600          | Salt.  |
|  |                    | 3,000 M                         | 25,000       | Brick.   |
|  |                    | 400 tons                        | 2,800        | Salt.  |
| 527,319                                  | 8,053              | 1,000 M                         | 7,000        | Brick.   |
|  |                    | 100 tons                        | 200          | Salt.  |
| 176,813                                  | 7,538              | 1,600 M                         | 20,000       | Brick.   |
|  |                    | 5,600 tons                      | 11,200       | Clay.  |
| 241,949                                  | 9,100              | 50 tons                         | 150          | Salt.  |
| 181,952                                  | 8,596              | 100 tons                        | 300          | Salt.  |
|  |                    | 500 M                           | 4,000        | Brick.   |
| 130,445                                  | 8,528              | 50 tons                         | 100          | Salt.  |
|  |                    | 2,200 M                         | 20,000       | Brick.   |
| 28,915                                   | 7,366              |                                 | 13,570.019   | Unapportioned, 1900-1913, inclusive.   |
| 71,288                                   | 5,546              |                                 | 1,500,000    | Other minerals.  |
| 37,576                                   | "                  |                                 | 1,290,347    | Cement, fuller's earth, natural gas, quicksilver, salt.                                |
| 49,711                                   | "                  |                                 | 1,090,164    | Cement, natural gas, salt.   |
| 39,826                                   | "                  |                                 | 1,804,060    | Cement, fuller's earth, natural gas, salt.   |
| 30,124                                   | "                  |                                 | 1,378,758    | Cement, fuller's earth, natural gas, onyx, salt.                                       |
| 44,156                                   | "                  |                                 | 1,627,928    | Cement, fuller's earth, mineral water, natural gas, quicksilver.                       |
| "  | "                  |                                 | 2,930,614    | Cement, limestone, onyx, mineral water, natural gas, quicksilver, miscellaneous stone. |
| 60,604                                   |                    |                                 | 2,969,594    | Cement, mineral water, onyx.   |
| 103,394                                  |                    |                                 | 3,004,720    | Cement, mineral water, onyx.   |
| 113,545                                  |                    |                                 | 3,263,340    | Cement, mineral water, onyx, quicksilver.  |
| 117,475                                  |                    |                                 | 2,972,000    | Cement, mineral water, onyx.   |
| 145,484                                  |                    |                                 | 2,678,547    | Cement, mineral water, onyx.   |
|  |                    |                                 | 1,770,820    | Onyx, travertine, cement, mineral water.   |
|  |                    |                                 | 1,557,840    | Cement, clay (pottery), mineral water, miscellaneous stone, travertine.                |
|  |                    |                                 | 57,451       | Mineral water, onyx, travertine, miscellaneous stone.                                  |
|  |                    |                                 | 66,421       | Mineral water, onyx, travertine, miscellaneous stone.                                  |
|  |                    |                                 | 46,638       | Onyx, travertine, quicksilver, miscellaneous stone.                                    |
|  |                    |                                 | 62,270       | Onyx, travertine, miscellaneous stone.   |
|  |                    |                                 | 36,202       | Onyx, travertine, miscellaneous stone.   |
|  |                    |                                 | 16,996       | Onyx, travertine, miscellaneous stone.   |
|  |                    |                                 | 23,641       | Onyx, travertine, miscellaneous stone.   |
| \$2,677,007                              | \$61,311           |                                 | \$44,335,345 |  |

## MINERAL PRODUCTION OF

| Year        | Quicksilver |             | Mineral paint |          | Brick  |           |
|-------------|-------------|-------------|---------------|----------|--------|-----------|
|             | Flasks      | Value       | Tons          | Value    | M      | Value     |
| 1873.....   | 50          | \$4,017     |               |          |        |           |
| 1874.....   | 1,700       | 178,806     |               |          |        |           |
| 1875.....   | 1,218       | 102,495     |               |          |        |           |
| 1876.....   | 3,897       | 171,468     |               |          |        |           |
| 1877.....   | 3,609       | 134,616     |               |          |        |           |
| 1878.....   | 3,255       | 106,890     |               |          |        |           |
| 1879.....   | 2,977       | 88,923      |               |          |        |           |
| 1880.....   | 1,445       | 44,795      |               |          |        |           |
| 1881.....   | 1,273       | 37,974      |               |          |        |           |
| 1882.....   | 2,124       | 59,960      |               |          |        |           |
| 1883.....   | 1,669       | 47,984      |               |          |        |           |
| 1884.....   | 332         | 10,126      |               |          |        |           |
| 1885.....   | 446         | 13,715      |               |          |        |           |
| 1886.....   | 735         | 26,093      |               |          |        |           |
| 1887.....   | 689         | 29,196      |               |          | 1,000  | \$5,000   |
| 1888.....   | 1,151       | 48,918      |               |          | 1,000  | 5,000     |
| 1889.....   | 1,345       | 60,525      |               |          |        |           |
| 1890.....   | 1,046       | 54,915      |               |          |        |           |
| 1891.....   | 1,660       | 75,115      |               |          |        |           |
| 1892.....   | 1,630       | 66,357      |               |          |        |           |
| 1893.....   | 1,445       | 53,104      |               |          |        |           |
| 1894.....   | 1,368       | 41,998      | 100           | \$3,500  | 375    | 1,875     |
| 1895.....   | 1,813       | 70,707      | 225           | 3,375    | 350    | 1,750     |
| 1896.....   | 1,126       | 37,150      | 220           | 3,740    | 250    | 1,250     |
| 1897.....   | 1,538       | 59,982      | 270           | 3,780    | 300    | 1,500     |
| 1898.....   | 1,704       | 63,048      |               |          | 350    | 2,800     |
| 1899.....   | 2,119       | 105,950     |               |          | 200    | 1,800     |
| 1900.....   | 2,209       | 99,500      |               |          | 280    | 2,360     |
| 1901.....   | 2,130       | 95,850      |               |          | 150    | 1,200     |
| 1902.....   | 1,440       | 64,685      | 30            | 105      | 150    | 1,200     |
| 1903.....   | 2,404       | 98,676      | 800           | 320      | 160    | 1,440     |
| 1904.....   | 2,700       | 102,829     |               |          | 175    | 1,750     |
| 1905.....   | 2,504       | 97,041      |               |          | 500    | 4,000     |
| 1906.....   | 2,070       | 75,555      |               |          | 6,800  | 115,000   |
| 1907.....   | 560         | 21,369      |               |          | 11,600 | 133,479   |
| 1908.....   | 590         | 24,939      |               |          | 11,000 | 83,000    |
| 1909.....   | 344         | 14,226      |               |          | 6,500  | 29,000    |
| 1910.....   | 260         | 11,765      |               |          |        |           |
| 1911.....   | 94          | 4,325       |               |          |        |           |
| 1912.....   | 646         | 27,158      |               |          |        |           |
| 1913.....   | 12          | 48          |               |          |        |           |
| 1914.....   | 13          | 638         |               |          |        |           |
| 1915.....   | 159         | 21,793      |               |          |        |           |
| 1916.....   | 1,039       | 97,140      |               |          |        |           |
| 1917.....   | 2,592       | 24,481      |               |          |        |           |
| 1918.....   | 2,417       | 28,223      |               |          |        |           |
| 1919.....   | 1,418       | 119,142     |               |          |        |           |
| 1920.....   | "           |             |               |          |        |           |
| 1921.....   | "           |             |               |          |        |           |
| 1922.....   | "           |             |               |          |        |           |
| 1923.....   | 528         | 31,147      |               |          |        |           |
| 1924.....   | 867         | 60,840      |               |          |        |           |
| 1925.....   | 351         | 29,134      |               |          |        |           |
| 1926.....   |             |             |               |          |        |           |
| 1927.....   | 373         | 43,068      |               |          |        |           |
| 1928.....   | "           |             |               |          |        |           |
| 1929.....   | "           |             |               |          |        |           |
| 1930.....   | "           |             |               |          |        |           |
| 1931.....   | 449         | 39,392      |               |          |        |           |
| 1932.....   | 247         | 11,642      |               |          |        |           |
| 1933.....   | "           |             |               |          |        |           |
| 1934.....   | 393         | 27,288      |               |          |        |           |
| Totals..... | 4572,253    | \$3,539,601 | 1,645         | \$14,820 | 41,140 | \$393,404 |

- 1 Includes crushed rock, rubble, rip-rap, paving blocks, sand, gravel.  
 2 Eleventh Census Report, Vol. X, Part 3, p. 605.  
 3 Estimated.



**SONOMA COUNTY, 1873-1934**

| Mineral water |          | Miscellaneous stone <sup>1</sup> , value | Magnesite |         | Miscellaneous and unapportioned |         |  |
|---------------|----------|--|-----------|---------|---------------------------------|---------|--|
| Gallons       | Value    |  | Tons      | Value   | Amount                          | Value   | Substance  |
|               |          |  |           |         |                                 |         |  |
|               |          |  |           |         |                                 |         |  |
|               |          |  |           |         |                                 |         |  |
|               |          |  |           |         |                                 |         |  |
|               |          |  |           |         |                                 |         |  |
|               |          |  |           |         |                                 |         |  |
|               |          |  |           |         |                                 |         |  |
|               |          |  |           |         |                                 |         |  |
|               |          |  |           |         |                                 |         |  |
|               |          |  |           |         |                                 |         |  |
|               |          | \$350,000                                |           |         |                                 |         |  |
|               |          | 367,500                                  |           |         |                                 |         |  |
|               |          | *297,236                                 |           |         |                                 |         |  |
|               |          | *245,000                                 |           |         |                                 |         |  |
|               |          | *150,000                                 |           |         |                                 |         |  |
|               |          | 96,000                                   |           |         |                                 |         |  |
|               |          | 92,800                                   |           |         |                                 |         |  |
|               |          | 57,381                                   |           |         |                                 |         |  |
|               |          | 69,508                                   |           |         |                                 |         |  |
| 8,000         | \$32,500 |  |           |         |                                 |         |  |
| 14,400        | 19,287   |  |           |         |                                 |         |  |
| 236,000       | 24,000   |  |           |         |                                 |         |  |
| 246,680       | 23,490   |  |           |         |                                 |         |  |
| 21,000        | 18,500   |  |           |         |                                 |         |  |
| 575,000       | 35,000   |  |           |         |                                 |         |  |
| 60,900        | 17,691   | 52,701                                   | 175       | \$1,225 | 64 tons                         | \$4,460 | Graphite.  |
| 30,000        | 9,100    | 121,578                                  | 130       | 455     | 42 tons                         | 1,680   | Graphite.  |
| 10,000        | 4,000    | 90,933                                   |           |         |                                 |         |  |
| 11,000        | 4,400    | 75,947                                   |           |         | 1,500 bbls.                     | 2,250   | Lime.  |
| 10,000        | 4,000    | 213,830                                  |           |         |                                 |         |  |
| 10,000        | 4,000    | 158,218                                  |           |         |                                 |         |  |
|               |          |  |           |         |                                 | 300     | Gems.  |
| 12,000        | 4,200    | 132,946                                  | 250       | 1,250   | 1,500 bbls.                     | 2,600   | Lime.  |
|               |          |  |           |         |                                 | 50      | Gems.  |
| 10,000        | 1,000    | 307,695                                  | 15        | 180     | 10,500 tons                     | 10,700  | Clay.  |
| 104,000       | 21,350   | 319,716                                  |           |         | 2,600 tons                      | 3,000   | Clay.  |
|               |          |  |           |         | 500 tons                        | 5,500   | Clay.  |
| 235,000       | 50,350   | 220,998                                  |           |         |                                 | 15,000  | Unapportioned, 1900-1909.                                |
| 202,500       | 50,250   | 184,035                                  |           |         |                                 | 1,000   | Unapportioned.   |
| 62,500        | 20,950   | 295,198                                  | 300       | 3,000   |                                 |         |  |
| 96,240        | 46,910   | 191,436                                  |           |         |                                 |         |  |
| 80,015        | 46,160   | 276,516                                  | 213       | 2,130   |                                 | 700     | Other minerals.  |
| 258,600       | 41,231   | 177,917                                  | 3,624     | 34,788  |                                 | 375     | Other minerals.  |
| 121,366       | 28,031   | 232,113                                  | 11,653    | 98,280  | 243 tons                        | 2,478   | Chromite.  |
|               |          |  |           |         |                                 | 14,000  | Building stone, manganese.                               |
|               |          |  |           |         | 226 tons                        | 6,200   | Chromite.  |
| 121,290       | 35,031   | 146,621                                  | 5,636     | 61,335  | 362 tons                        | 12,689  | Manganese.   |
|               |          |  |           |         |                                 | 64      | Other minerals.  |
|               |          |  |           |         | 1,540 tons                      | 73,906  | Chromite.  |
| 83,220        | 36,050   | 148,347                                  | 4,110     | 40,010  | 173 tons                        | 7,645   | Manganese.   |
|               |          |  |           |         |                                 | 100     | Other minerals.  |
| 96,800        | 22,820   | 144,014                                  |           |         |                                 | 62      | Building stone, curbing.                                 |
| 29,928        | 6,578    | 217,667                                  |           |         |                                 | 63,000  | Magnesite, quicksilver.                                  |
| 37,641        | 9,891    | 151,300                                  |           |         |                                 | 14,360  | Gems, magnesite, quicksilver.                            |
| 35,843        | 9,108    | 162,679                                  |           |         |                                 | 50,154  | Pottery clay, gems, quicksilver.                         |
| 30,661        | 7,106    | 189,059                                  |           |         |                                 |         |  |
| 31,003        | 8,002    | 101,009                                  |           |         |                                 | 2,200   |  |
| 17,713        | 6,679    | 119,546                                  |           |         |                                 | 4,872   | Pottery clay, building stone, manganese.                 |
|               |          |  |           |         |                                 | 6,355   | Pottery clay, gems, manganese ore, petroleum, sandstone. |
| 36,272        | 7,752    | 208,479                                  |           |         |                                 | 7,682   | Petroleum, sandstone.                                    |
| 25,428        | 5,889    | 208,753                                  |           |         |                                 | 6,250   | Sandstone.   |
| 32,720        | 9,127    | 111,429                                  |           |         |                                 | 85,763  | Chromite, gems, quicksilver.                             |
|               |          |  |           |         |                                 | 13,351  | Sandstone.   |
| 20,701        | 7,376    | 243,383                                  |           |         |                                 | 87,208  | Chromite, gems, quicksilver.                             |
| 17,900        | 5,318    | 263,644                                  |           |         |                                 | 61,437  | Quicksilver, sandstone.                                  |
| 44,576        | 8,227    | 204,702                                  |           |         |                                 | 315     | Unapportioned.   |
| 15,864        | 4,123    | 151,734                                  |           |         |                                 | 350     | Unapportioned.   |
| 23,016        | 2,390    | 147,266                                  |           |         |                                 | 8,332   | Grenite (tuff), quicksilver.                             |

<sup>a</sup> Flasks of 76½ pounds previous to June, 1904; of 75 pounds thence, through 1927; of 76 pounds since January, 1928.

\* See under 'Unapportioned.'

\* There was a considerable production of paving blocks in Sonoma County in the 70's and 80's, but no available records of annual amounts or values.

## MINERAL PRODUCTION OF

| Year   | Gold,<br>value | Silver,<br>value | Brick |          | Magnesite |           | Manganese |           |
|--------|----------------|------------------|-------|----------|-----------|-----------|-----------|-----------|
|        |                |                  | M     | Value    | Tons      | Value     | Tons      | Value     |
| 1880   | \$73,271       |                  |       |          |           |           |           |           |
| 1881   | 63,000         | \$31,000         |       |          |           |           |           |           |
| 1882   | 80,000         | 15,000           |       |          |           |           |           |           |
| 1883   | 40,000         | 5,000            |       |          |           |           |           |           |
| 1884   | 40,000         | 5,000            |       |          |           |           |           |           |
| 1885   | 18,660         |                  |       |          |           |           |           |           |
| 1886   | 47,175         |                  |       |          |           |           |           |           |
| 1887   | 53,297         |                  |       |          |           |           |           |           |
| 1888   | 75,000         |                  |       |          |           |           |           |           |
| 1889   | 20,410         |                  |       |          |           |           |           |           |
| 1890   | 5,335          |                  |       |          |           |           |           |           |
| 1891   | 3,000          |                  |       |          |           |           |           |           |
| 1892   | 14,191         |                  |       |          |           |           |           |           |
| 1893   | 150            |                  |       |          |           |           |           |           |
| 1894   | 26,369         |                  |       |          |           |           |           |           |
| 1895   | 26,482         |                  |       |          |           |           |           |           |
| 1896   | 16,635         |                  |       |          |           |           |           |           |
| 1897   | 37,392         |                  |       |          |           |           |           |           |
| 1898   | 19,400         |                  |       |          |           |           |           |           |
| 1899   | 10,000         |                  |       |          |           |           |           |           |
| 1900   | 21,212         |                  |       |          |           |           |           |           |
| 1901   | 15,700         |                  |       |          | 100       | \$600     |           |           |
| 1902   |                |                  |       |          |           |           |           |           |
| 1903   | 52,869         | 256              |       |          |           |           |           |           |
| 1904   | 50,000         | 265              |       |          |           |           |           |           |
| 1905   | 50,000         | 240              |       |          |           |           |           |           |
| 1906   | 3              | 3                |       |          |           |           |           |           |
| 1907   | 3,364          | 28               |       |          |           |           |           |           |
| 1908   | 2              | 2                | 750   | \$7,000  |           |           |           |           |
| 1909   | 2              | 2                | 5,000 | 50,000   |           |           |           |           |
| 1910   | 214,187        | 604              | 1,500 | 8,000    |           |           |           |           |
| 1911   | 307,538        | 1,131            | 850   | 5,950    |           |           |           |           |
| 1912   | 226,163        | 1,974            | 250   | 2,000    |           |           |           |           |
| 1913   | 253,166        | 671              | 300   | 2,400    |           |           |           |           |
| 1914   | 2              | 2                | 250   | 2,500    |           |           |           |           |
| 1915   | 3              | 3                |       |          |           |           |           |           |
| 1916   | 3              | 3                | 3     |          |           |           | 160       | \$2,400   |
| 1917   | 3              | 3                |       |          | 3,196     | 44,350    | 775       | 26,925    |
| 1918   | 14,196         | 592              |       |          | 2,024     | 18,038    | 5,753     | 222,422   |
| 1919   | 3              | 3                |       |          | 2,031     | 20,831    | 8,921     | 374,584   |
| 1920   | 142,467        | 775              |       |          | 4,064     | 39,435    | 893       | 12,973    |
| 1921   | 18,439         | 136              |       |          | 3,378     | 33,158    | 3         | 3         |
| 1922   | 3              | 3                |       |          | 2,400     | 35,475    |           |           |
| 1923   | 174,814        | 833              |       |          |           |           |           |           |
| 1924   | 190,019        | 773              |       |          |           |           | 3         |           |
| 1925   | 171,742        | 694              |       |          |           |           | 3         |           |
| 1926   | 127,398        | 411              |       |          |           |           | 3         |           |
| 1927   | 120,238        | 345              |       |          |           |           | 3         |           |
| 1928   | 195,683        | 556              |       |          | 3         |           |           |           |
| 1929   | 128,872        | 344              |       |          | 3         |           | 3         |           |
| 1930   | 109,134        | 208              |       |          | 3         |           |           |           |
| 1931   | 154,443        | 223              |       |          | 3         |           |           |           |
| 1932   | 152,865        | 194              |       |          | 3         |           |           |           |
| 1933   | 148,204        | 241              |       |          | 3         |           |           |           |
| 1934   | 239,158        | 544              |       |          | 3         |           |           |           |
| Totals | \$4,057,638    | \$68,038         | 8,900 | \$77,850 | 17,093    | \$191,287 | 16,502    | \$639,304 |

<sup>1</sup> Includes Merced County.

<sup>2</sup> See Merced County.

<sup>3</sup> See under 'Unapportioned.'

<sup>4</sup> Includes Merced County production; also dredge yield of Shasta and Trinity counties.

<sup>5</sup> Includes dredge production of Merced and Siskiyou counties.

[illegible]

<sup>a</sup> There was a small production of quicksilver in the 70's and between 1884-1888, but no definite record of amounts.

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MINERAL PRODUCTION OF CALIFORNIA

MINERAL PRODUCTION OF SUTTER COUNTY, 1908-1934

| Year       | Amount     | Value    | Substance                    |
|------------|------------|----------|------------------------------|
| 1908.....  | 5,000 tons | \$5,000  | Macadam.                     |
| 1909.....  |            |          |                              |
| 1916.....  | 5,733 tons | 6,450    | Crushed rock.                |
| 1917.....  | 4,500 tons | 5,000    | Crushed rock.                |
| 1918.....  |            |          |                              |
| 1919.....  |            |          |                              |
| 1920.....  |            | 54       | Other minerals. <sup>1</sup> |
| 1921.....  |            | 54       | Other minerals. <sup>1</sup> |
| 1922.....  |            | 97       | Unapportioned. <sup>1</sup>  |
| 1923.....  |            | 97       | Unapportioned. <sup>1</sup>  |
| 1924.....  |            | 97       | Unapportioned. <sup>1</sup>  |
| 1925.....  |            | 397      | Unapportioned. <sup>1</sup>  |
| 1926.....  |            | 397      | Unapportioned. <sup>1</sup>  |
| 1927.....  |            | 300      | Unapportioned.               |
| 1928.....  |            |          |                              |
| 1933.....  |            | 11,900   | Unapportioned. <sup>1</sup>  |
| 1934.....  |            | 3,322    | Unapportioned. <sup>1</sup>  |
| Total..... |            | \$33,165 |                              |

<sup>1</sup> Includes miscellaneous stone and natural gas.



## MINERAL PRODUCTION OF

| Year           | Gold,<br>value | Chromite |           | Brick  |          |
|----------------|----------------|----------|-----------|--------|----------|
|                |                | Tons     | Value     | M      | Value    |
| 1880-1884..... | \$22,000       |          |           |        |          |
| 1894.....      |                | 1,680    | \$12,680  |        |          |
| 1895.....      |                | 950      | 9,025     | 500    | \$2,500  |
| 1896.....      |                | 56       | 475       |        |          |
| 1897.....      |                |          |           |        |          |
| 1898.....      |                |          |           | 200    | 1,400    |
| 1899.....      |                |          |           | 300    | 1,800    |
| 1900.....      |                |          |           | 325    | 2,200    |
| 1901.....      |                |          |           | 300    | 2,000    |
| 1902.....      |                |          |           | 500    | 3,500    |
| 1903.....      |                |          |           | 600    | 4,500    |
| 1904.....      |                |          |           | 500    | 3,500    |
| 1905.....      |                |          |           | 650    | 5,000    |
| 1906.....      |                |          |           | 700    | 5,600    |
| 1907.....      |                |          |           | 400    | 3,200    |
| 1908.....      |                |          |           | 400    | 3,000    |
| 1909.....      |                |          |           |        |          |
| 1910.....      |                |          |           | 600    | 3,600    |
| 1911.....      |                |          |           |        |          |
| 1912.....      |                |          |           | 225    | 1,300    |
| 1913.....      |                |          |           | 300    | 1,800    |
| 1914.....      |                |          |           |        |          |
| 1915.....      |                | 1        |           | 400    | 2,700    |
| 1916.....      |                | 1,896    | 39,702    | 1      |          |
| 1917.....      |                | 2,053    | 41,646    |        |          |
| 1918.....      |                | 3,261    | 152,291   |        |          |
| 1919.....      |                | 1        |           |        |          |
| 1920.....      |                |          |           |        |          |
| 1921.....      |                |          |           |        |          |
| 1922.....      |                |          |           | 1      |          |
| 1923.....      |                |          |           |        |          |
| 1924.....      |                | 1        |           | 1      |          |
| 1925.....      |                |          |           | 1      |          |
| 1926.....      |                | 1        |           | 1      |          |
| 1927.....      |                |          |           |        |          |
| 1928.....      |                |          |           |        |          |
| 1929.....      |                | 1        |           |        |          |
| 1930.....      |                |          |           | 1      |          |
| 1931.....      |                |          |           |        |          |
| 1932.....      |                |          |           | 1      |          |
| 1933.....      |                |          |           |        |          |
| 1934.....      | 1,146          |          |           |        |          |
| Totals.....    | \$23,146       | 9,896    | \$255,819 | 16,800 | \$47,600 |

1 Includes crushed rock, rubble, sand, gravel.

2 See under 'Unapportioned.'

| Mineral water |           | Salt,<br>value | Miscel-<br>laneous<br>stone, <sup>1</sup><br>value | Miscellaneous and unapportioned |           |   |
|---------------|-----------|----------------|--|---------------------------------|-----------|---|
| Gallons       | Value     |                |  | Amount                          | Value     | Substance                                   |
|               |           |                |  |                                 |           |   |
|               |           |                |  |                                 |           |   |
|               |           |                |  |                                 |           |   |
|               |           |                |  |                                 |           |   |
|               |           |                |  |                                 |           |   |
| 10,000        | \$2,400   |                |  |                                 |           |   |
| 54,000        | 8,000     |                |  |                                 |           |   |
| 10,000        | 18,000    |                |  |                                 |           |   |
|               |           |                |  |                                 |           |   |
| 20,000        | 4,000     |                |  |                                 |           |   |
|               |           |                |  |                                 |           |   |
| 5,000         | 2,500     |                |  |                                 |           |   |
|               |           |                |  |                                 |           |   |
| 8,000         | 4,000     |                |  |                                 |           |   |
| 8,000         | 4,000     |                |  |                                 |           |   |
| 550,000       | 55,000    |                |  |                                 |           |   |
| 20,000        | 2,000     | \$300          |  |                                 |           |   |
| 5,000         | 500       | 300            |  |                                 |           |   |
| 5,000         | 500       | 300            |  |                                 |           |   |
| 5,000         | 500       |                |  |                                 |           |   |
|               |           |                |  |                                 |           |   |
| 75            | 42        |                | \$600  |                                 |           |   |
| 100           | 100       | 200            |  |                                 |           |   |
| 1,000         | 500       |                | 750  |                                 | \$752     | Chromite and salt.                          |
|               |           |                | 11,076   |                                 | 3,375     | Brick, granite, mineral water, natural gas. |
|               |           |                |  |                                 |           |   |
|               |           |                | 2,373  |                                 |           |   |
|               |           |                | 2,500  |                                 | 2,800     | Other minerals.                             |
|               |           |                | 7,500  |                                 | 1,500     | Other minerals.                             |
|               |           |                |  |                                 | 26,400    | Unapportioned.                              |
|               |           |                |  |                                 | 300       | Other minerals.                             |
|               |           |                | 30,520   |                                 | 9,388     | Brick, miscellaneous stone.                 |
|               |           |                |  |                                 | 1,316     | Other minerals.                             |
|               |           |                | 4,900  |                                 | 8,400     | Brick, chromite.                            |
|               |           |                | 26,054   |                                 | 77,183    | Brick, miscellaneous stone.                 |
|               |           |                |  |                                 | 8,240     | Brick, chromite.                            |
|               |           |                | 2,100  |                                 | 900       | Other minerals.                             |
|               |           |                | 4,450  |                                 | 2,444     | Other minerals.                             |
|               |           |                | 11,945   |                                 | 4,524     | Chromite and sandstone.                     |
|               |           |                | 9,956  |                                 | 8,100     | Brick and sandstone.                        |
|               |           |                | 218,300  |                                 | 1,000     | Other minerals.                             |
|               |           |                | 49,407   |                                 | 2,500     | Brick and sandstone.                        |
|               |           |                | 11,887   |                                 | 25        | Other minerals.                             |
|               |           |                | 30,309   |                                 | 2         | Silver.                                     |
|               |           |                | 38,427   | 3 ozs.                          |           |   |
|               |           |                |  |                                 |           |   |
| \$701,175     | \$102,042 | \$1,100        | \$463,054  |                                 | \$159,349 |   |

## MINERAL PRODUCTION OF

| Year                                   | Gold,<br>value | Silver,<br>value | Quicksilver |             |
|--|----------------|------------------|-------------|-------------|
|  |                |                  | Flasks      | Value       |
| Altoona Mine, before 1875 (estimated)* | •              | •                | 1,000       | \$88,000    |
| 1875                                   |                |                  | 1,500       | 126,425     |
| 1876                                   |                |                  | 1,979       | 87,076      |
| 1877                                   |                |                  | 1,317       | 49,129      |
| 1878                                   |                |                  | 1,534       | 50,469      |
| 1879                                   |                |                  | 1,919       | 57,282      |
| 1880                                   | \$326,693      | \$142            | 245         | 7,595       |
| 1881                                   | 550,000        | 1,500            |             |             |
| 1882                                   | 600,000        |                  |             |             |
| 1883                                   | 400,000        |                  |             |             |
| 1884                                   | 529,150        | 334              |             |             |
| 1885                                   | 338,148        | 10               |             |             |
| 1886                                   | 464,726        | 219              |             |             |
| 1887                                   | 553,051        | 924              |             |             |
| 1888                                   | 589,000        | 500              |             |             |
| 1889                                   | 811,632        | 640              |             |             |
| 1890                                   | 1,192,790      | 259              |             |             |
| 1891                                   | 1,327,787      | 2,249            | 240         | 12,600      |
| 1892                                   | 1,446,603      | 168              |             |             |
| 1893                                   | 1,122,995      |                  |             |             |
| 1894                                   | 1,012,666      | 325              |             |             |
| 1895                                   | 1,166,745      | 1,257            | 3,926       | 137,410     |
| 1896                                   | 1,296,330      |                  | 4,205       | 139,035     |
| 1897                                   | 1,078,372      | 250              | 838         | 29,330      |
| 1898                                   | 859,255        | 314              | 4,032       | 151,200     |
| 1899                                   | 590,510        | 1,086            | 3,076       | 123,624     |
| 1900                                   | 571,605        | 7,935            | 2,294       | 105,982     |
| 1901                                   | 684,683        | 1,240            | 1,302       | 58,668      |
| 1902                                   | 719,992        | 550              | 240         | 10,251      |
| 1903                                   | 607,728        | 2,085            | 266         | 11,156      |
| 1904                                   | 574,814        | 135              | 702         | 3,864       |
| 1905                                   | 690,844        | 3,044            | 389         | 13,917      |
| 1906                                   | 560,843        | 2,981            | 166         | 6,050       |
| 1907                                   | 535,316        | 2,399            | 98          | 3,739       |
| 1908                                   | 602,944        | 4,269            | 90          | 3,808       |
| 1909                                   | 520,046        | 2,302            | 197         | 7,115       |
| 1910                                   | 500,851        | 1,960            | 133         | 5,122       |
| 1911                                   | 612,149        | 6,777            | 44          | 2,024       |
| 1912                                   | 723,503        | 7,494            | 18          | 758         |
| 1913                                   | 431,862        | 2,119            | 4           | 161         |
| 1914                                   | 743,512        | 3,374            |             |             |
| 1915                                   | 441,846        | 3,470            | •           |             |
| 1916                                   | 435,493        | 7,591            | •           |             |
| 1917                                   | 602,048        | 10,021           | •           |             |
| 1918                                   | 444,729        | 6,912            | •           |             |
| 1919                                   | 538,494        | 3,872            | •           |             |
| 1920                                   | 541,387        | 3,469            | •           |             |
| 1921                                   | 437,993        | 1,390            |             |             |
| 1922                                   | 182,918        | 2,432            |             |             |
| 1923                                   | 617,841        | 5,816            |             |             |
| 1924                                   | 422,281        | 10,934           |             |             |
| 1925                                   | 424,037        | 7,724            |             |             |
| 1926                                   | 483,471        | 13,276           |             |             |
| 1927                                   | 409,492        | 12,326           |             |             |
| 1928                                   | 402,694        | 12,258           |             |             |
| 1929                                   | 352,029        | 10,269           | •           |             |
| 1930                                   | 330,003        | 6,700            | •           |             |
| 1931                                   | 292,031        | 532              | •           |             |
| 1932                                   | 294,297        | 608              | •           |             |
| 1933                                   | 345,851        | 768              | •           |             |
| 1934                                   | 574,681        | 1,640            | •           |             |
| Totals                                 | \$33,910,761   | \$180,860        | 31,154      | \$1,293,099 |

\* Bradley, W. W., Quicksilver resources of California; Cal. State Min. Bur., Bull. 78, p. 200, 1918.

• Includes crushed rock, rubble, sand, gravel.

• Lawver, A. M., in 'Production of Precious Metals in U. S.'; Report of Director of Mint, 1884, p. 175, 1885.

• Recalculated to 'commercial' from 'coining value' as originally published.



[illegible]

<sup>7</sup> Flasks of 76½ pounds previous to June 1904; of 75 pounds thence, through 1927; of 76 pounds since January, 1928.

## MINERAL PRODUCTION OF

| Year      | Gold,<br>value | Silver,<br>value | Brick    |         | Gems,<br>value | Granite    |          |
|-----------|----------------|------------------|----------|---------|----------------|------------|----------|
|           |                |                  | M        | Value   |                | Cubic feet | Value    |
| 1880..... | \$1,125        | \$526            |          |         |                |            |          |
| 1881..... | 8,181          | 36               |          |         |                |            |          |
| 1882..... | 5,000          | 2,000            |          |         |                |            |          |
| 1883..... | 4,000          | 1,000            |          |         |                |            |          |
| 1884..... | 70,000         |                  |          |         |                |            |          |
| 1885..... | 7,500          |                  |          |         |                |            |          |
| 1886..... | 6,900          | 50               |          |         |                |            |          |
| 1887..... | 15,640         | 167              |          |         |                |            |          |
| 1888..... | 25,000         |                  |          |         |                |            |          |
| 1889..... | 39,340         | 250              |          |         |                |            |          |
| 1890..... | 43,019         |                  |          |         |                |            |          |
| 1891..... | 15,095         |                  |          |         |                |            |          |
| 1892..... | 24,355         | 11               |          |         |                |            |          |
| 1893..... | 12,818         |                  |          |         |                |            |          |
| 1894..... |                |                  |          |         |                | 4,668      | \$10,000 |
| 1895..... | 16,320         |                  |          |         |                | 3,000      | 2,500    |
| 1896..... | 20,092         |                  |          |         |                | 2,800      | 4,700    |
| 1897..... | 12,830         | 214              |          |         |                | 3,600      | 8,000    |
| 1898..... | 12,400         |                  | 300      | \$2,000 |                | 700        | 1,500    |
| 1899..... | 13,610         |                  | 600      | 4,200   |                | 1,200      | 3,000    |
| 1900..... | 10,445         | 433              | 650      | 6,100   |                | 1,500      | 3,000    |
| 1901..... | 14,616         | 100              | 1,600    | 8,600   |                | 9,000      | 18,000   |
| 1902..... | 11,648         |                  | 4,500    | 27,000  | \$500          | 1,790      | 4,000    |
| 1903..... | 9,215          |                  | 1,500    | 9,500   | 500            | 3,000      | 2,260    |
| 1904..... | 1,100          |                  | 1,250    | 10,000  |                | 7,000      | 16,000   |
| 1905..... | 2,300          | 13               | 2,000    | 16,000  | 5,000          | 7,000      | 9,000    |
| 1906..... | 20             |                  | 1,500    | 12,000  | 209,790        | 7,000      | 9,000    |
| 1907..... |                |                  | 2,500    | 20,000  | 26,206         |            |          |
| 1908..... |                |                  | 2,250    | 18,000  | 62,250         |            |          |
| 1909..... |                |                  | 6,620    | 42,400  | 58,000         |            |          |
| 1910..... |                |                  | 8,195    | 64,000  | 104,000        | 700        | 1,500    |
| 1911..... |                |                  | 10,225   | 81,000  | 20,000         |            |          |
| 1912..... |                |                  | 10,900   | 70,500  | 5,350          |            |          |
| 1913..... |                |                  | 6,000    | 45,000  | 1,500          |            |          |
| 1914..... |                |                  | 6,838    | 47,507  |                |            |          |
| 1915..... |                |                  | 5,520    | 33,364  |                |            |          |
| 1916..... |                |                  | 6,330    | 48,500  |                |            | 1        |
| 1917..... |                |                  | 6,771    | 112,938 |                |            | 2        |
| 1918..... |                |                  | 2        |         | 2              |            | 1        |
| 1919..... |                |                  | and tile | 34,978  |                |            | 2        |
| 1920..... |                |                  | 2        |         |                |            |          |
| 1921..... |                |                  |          |         |                |            | 2        |
| 1922..... |                |                  | 2        |         |                |            | 2        |
| 1923..... |                |                  | 2        |         |                |            | 2        |
| 1924..... |                |                  | 2        |         |                |            | 2        |
| 1925..... |                |                  | 2        |         |                |            | 62,260   |

<sup>1</sup> Includes crushed rock, rubble, sand, gravel.

<sup>2</sup> See under 'Unapportioned.'

[illegible]

MINERAL PRODUCTION OF

| Year         | Gold,<br>value | Silver,<br>value | Brick |           | Gems,<br>value | Granite    |           |
|--------------|----------------|------------------|-------|-----------|----------------|------------|-----------|
|              |                |                  | M     | Value     |                | Cubic feet | Value     |
| 1926.....    |                |                  | ?     |           |                |            | ?         |
| 1927.....    |                |                  | ?     |           |                |            | ?         |
| 1928.....    |                |                  | ?     |           | ?              |            | ?         |
| 1929.....    |                |                  | ?     |           |                |            | ?         |
| 1930.....    | \$36           | \$311            |       |           | ?              |            | ?         |
| 1931.....    | 244            | 2                | ?     |           | ?              |            | ?         |
| 1932.....    | 141            | 1                | ?     |           | ?              |            | ?         |
| 1933.....    | 2,152          | 14               | ?     |           |                |            | ?         |
| 1934.....    | 5,114          | 94               | ?     |           | ?              |            |           |
| Totals ..... | \$410,256      | \$5,222          |       | \$713,587 | \$493,096      |            | \$154,720 |

## TULARE COUNTY, 1880-1934—Continued

| Magnesite |             | Miscellaneous stone <sup>1</sup> , value | Miscellaneous and unapportioned |             |  |
|-----------|-------------|--|---------------------------------|-------------|--|
| Tons      | Value       |  | Amount                          | Value       | Substance  |
| 13,378    | \$138,347   | \$73,881                                 | 593 tons                        | \$7,709     | Lime.  |
|           |             |  | 18,000 tons                     | 70,000      | Limestone.   |
|           |             |  |                                 | 137,983     | Brick, hollow tile, granite, natural gas.  |
|           |             | 15,082                                   |                                 | 459,391     | Brick, hollow tile, granite, lime, limestone, magnesite.                           |
|           |             |  |                                 | 336,947     | Brick, gems, granite, lime, limestone, magnesite.                                  |
|           |             | 108,419                                  |                                 | 262,949     | Brick, granite, limestone, magnesite.  |
|           |             | 24,932                                   |                                 | 178,297     | Gems, granite, limestone, magnesite, petroleum.                                    |
|           |             | 74,500                                   |                                 | 121,092     | Barite, brick and building tile, gems, granite, magnesite, limestone, petroleum.   |
|           |             | 75,778                                   |                                 | 43,391      | Barite, brick and building tile, copper, gems, granite, lime, petroleum, tungsten. |
|           |             |  |                                 | 39,588      | Brick, granite, petroleum, tungsten.   |
|           |             | 72,541                                   |                                 | 32          | Copper.  |
|           |             | 136,859                                  | 4,434 lbs                       | 100         | Lead.  |
|           |             |  | 2,697 lbs                       | 39,259      | Barite, brick, gems, petroleum, tungsten.  |
|           |             | 139,875                                  |                                 |             |  |
| \$488,845 | \$4,710,120 | \$1,481,149                              |                                 | \$3,045,328 |  |

## MINERAL PRODUCTION OF

| Year        | Gold,<br>value | Silver,<br>value | Lime     |           | Limestone |           |
|-------------|----------------|------------------|----------|-----------|-----------|-----------|
|             |                |                  | Barrels  | Value     | Tons      | Value     |
| 1880        | \$461,861      | \$1,071          |          |           |           |           |
| 1881        | 500,000        | 1,000            |          |           |           |           |
| 1882        | 400,000        |                  |          |           |           |           |
| 1883        | 320,000        |                  |          |           |           |           |
| 1884        | 310,000        |                  |          |           |           |           |
| 1885        | 320,903        | 1,473            |          |           |           |           |
| 1886        | 452,438        | 1,551            |          |           |           |           |
| 1887        | 504,662        | 3,166            |          |           |           |           |
| 1888        | 475,000        | 3,500            |          |           |           |           |
| 1889        | 446,300        | 543              |          |           |           |           |
| 1890        | 1,500,629      | 13,062           |          |           |           |           |
| 1891        | 1,384,950      | 139              |          |           |           |           |
| 1892        | 1,092,549      | 911              |          |           |           |           |
| 1893        | 354,734        | 1,329            |          |           |           |           |
| 1894        | 547,448        | 1,072            |          |           |           |           |
| 1895        | 666,754        | 313              |          |           |           |           |
| 1896        | 1,070,141      | 328              |          |           |           |           |
| 1897        | 1,809,572      | 1,696            |          |           |           |           |
| 1898        | 1,734,953      | 15,582           |          |           |           |           |
| 1899        | 1,635,769      | 15,111           |          |           |           |           |
| 1900        | 1,596,591      | 62,367           |          |           |           |           |
| 1901        | 1,670,368      | 39,787           |          |           |           |           |
| 1902        | 1,791,829      | 6,580            |          |           |           |           |
| 1903        | 1,732,572      | 13,989           | 1,600    | \$1,600   |           |           |
| 1904        | 1,563,907      | 12,963           |          |           |           |           |
| 1905        | 1,291,726      | 21,348           | 500      | 1,000     |           |           |
| 1906        | 1,039,675      | 8,476            | 500      | 1,000     |           |           |
| 1907        | 806,875        | 6,453            | 110,000  | 125,000   |           |           |
| 1908        | 798,752        | 11,732           | 60,000   | 69,500    | 1,233     | \$6,500   |
| 1909        | 925,703        | 4,384            | 60,000   | 60,000    | 15,057    | 28,942    |
| 1910        | 615,626        | 5,754            | 78,300   | 78,300    | 3,600     | 10,400    |
| 1911        | 1,093,484      | 13,243           | 75,000   | 70,000    | 4,319     | 13,609    |
| 1912        | 1,113,291      | 25,146           | 117,450  | 121,250   | 11,554    | 20,099    |
| 1913        | 974,409        | 24,381           | 75,000   | 85,000    | 12,446    | 20,676    |
| 1914        | 940,793        | 12,017           | 63,331   | 38,000    | 16,707    | 21,907    |
| 1915        | 1,058,103      | 13,480           | ?        |           | 8,859     | 11,349    |
| 1916        | 868,237        | 17,039           | ?        |           | 3,137     | 5,132     |
| 1917        | 321,085        | 7,808            | ?        |           | 3,287     | 6,481     |
| 1918        | 274,328        | 21,425           | ?        |           | 3,064     | 5,600     |
| 1919        | 471,021        | 11,076           | ?        |           | ?         |           |
| 1920        | 254,569        | 6,007            | ?        |           | 7,494     | 15,288    |
| 1921        | 96,026         | 2,505            | ?        |           | 3,650     | 9,475     |
| 1922        | 222,366        | 2,976            |          |           |           |           |
| 1923        | 261,936        | 2,801            |          |           | 3,140     | 7,680     |
| 1924        | 255,994        | 1,106            |          |           | 8,515     | 19,983    |
| 1925        | 155,592        | 614              |          |           |           | 268,000   |
| 1926        | 119,573        | 1,119            |          |           |           |           |
| 1927        | 40,209         | 302              |          |           | ?         |           |
| 1928        | 36,807         | 185              | ?        |           | ?         |           |
| 1929        | 70,957         | 2,735            | ?        |           | ?         |           |
| 1930        | 67,691         | 300              | ?        |           | ?         |           |
| 1931        | 77,902         | 180              | ?        |           | ?         |           |
| 1932        | 93,939         | 214              | ?        |           | ?         |           |
| 1933        | 107,736        | 280              | ?        |           | ?         |           |
| 1934        | 269,256        | 1,147            | ?        |           | ?         |           |
| Totals..... | \$39,048,191   | \$423,766        | 7641,681 | \$650,650 | 7106,062  | \$481,121 |

\* Includes crushed rock, macadam, rubble, sand, gravel.

† Includes mineral paint and sandstone.

‡ Includes granite, lime, magnesite, marble.

§ Includes clay, dolomite, granite, lime, marble.

**TUOLUMNE COUNTY, 1880-1934**[illegible]

\* Includes lime.

- Includes dolomite, granite, marble.

- Includes granite, lead, lime, limestone, magnesite, marble, silica.

<sup>7</sup> See under 'Unapportioned.'

## MINERAL PRODUCTION OF

| Year        | Gold,<br>value | Petroleum   |               | Natural gas |              | Asphalt and<br>bituminous brick |           | Brick |           |
|-------------|----------------|-------------|---------------|-------------|--------------|---------------------------------|-----------|-------|-----------|
|             |                | Barrels     | Value         | M Cu. Ft.   | Value        | Tons                            | Value     | M     | Value     |
| 1880.....   | \$354          | ?           |               |             |              |                                 |           |       |           |
| 1881.....   | 600            |             |               |             |              |                                 |           |       |           |
| 1882.....   |                |             |               |             |              |                                 |           |       |           |
| 1883.....   |                |             |               |             |              |                                 |           |       |           |
| 1884.....   |                |             |               |             |              |                                 |           |       |           |
| 1885.....   |                |             |               |             |              |                                 |           |       |           |
| 1886.....   |                |             |               |             |              |                                 |           |       |           |
| 1887.....   |                |             |               |             |              |                                 |           |       |           |
| 1888.....   |                |             |               |             |              |                                 |           |       |           |
| 1889.....   |                |             |               |             |              |                                 |           |       |           |
| 1890.....   | 2,468          |             |               |             |              |                                 |           |       |           |
| 1891.....   | 1,715          |             |               |             |              |                                 |           |       |           |
| 1892.....   |                |             |               |             |              |                                 |           |       |           |
| 1893.....   |                |             |               |             |              |                                 |           |       |           |
| 1894.....   |                | 290,913     | \$367,822     |             |              | 248                             | \$4,800   |       |           |
| 1895.....   |                | 244,624     | 244,624       |             |              | 175                             | 3,500     |       |           |
| 1896.....   |                | 248,000     | 272,800       |             |              |                                 |           |       |           |
| 1897.....   |                | 368,282     | 368,282       |             |              |                                 |           |       |           |
| 1898.....   |                | 427,000     | 571,000       |             |              | 4,105                           | 80,775    | 286   | \$2,228   |
| 1899.....   | 3,990          | 496,200     | 496,200       |             |              | 5,188                           | 103,760   | 375   | 3,000     |
| 1900.....   | 2,562          | 443,000     | 398,700       |             |              | 1,466                           | 31,670    | 230   | 1,700     |
| 1901.....   | 4,183          | 472,057     | 236,028       |             |              | 2,073                           | 30,945    |       |           |
| 1902.....   | 2,012          | 475,000     | 455,000       |             |              | 37                              | 370       |       |           |
| 1903.....   | 1,087          | 542,902     | 517,611       |             |              | 1,114                           | 13,368    | 1,380 | 12,900    |
| 1904.....   | 2,700          | 518,000     | 465,682       | 1,800       | \$2,700      | 3,169                           | 38,028    |       |           |
| 1905.....   | 1,200          | 375,522     | 236,578       | 3,831       | 5,000        | 3,000                           | 30,000    | 1,300 | 10,400    |
| 1906.....   |                | 311,000     | 155,500       | 3,500       | 1,000        | 3,700                           | 37,000    | 1,675 | 11,650    |
| 1907.....   |                | 352,224     | 211,334       | 1,825       | 2,278        |                                 |           | 1,600 | 12,800    |
| 1908.....   |                | 289,625     | 217,219       | 3,625       | 4,531        |                                 |           | 200   | 1,500     |
| 1909.....   |                | 344,419     | 223,872       | 1,721       | 2,151        |                                 |           | 1,275 | 7,625     |
| 1910.....   |                | 492,147     | 319,898       | 545         | 681          |                                 |           | 1,190 | 36,945    |
| 1911.....   |                | 499,082     | 349,777       | 429,580     | 2,958        |                                 |           | 900   | 5,100     |
| 1912.....   |                | 662,300     | 584,811       | 455,068     | 4,163        |                                 |           | 550   | 3,575     |
| 1913.....   |                | 899,007     | 907,997       | 62,200      | 6,220        |                                 |           | 1,023 | 6,085     |
| 1914.....   |                | 943,929     | 991,125       | 100,000     | 6,000        |                                 |           | 449   | 3,102     |
| 1915.....   |                | 1,017,220   | 869,723       | 491,879     | 29,670       |                                 |           | 200   | 2,500     |
| 1916.....   |                | 943,499     | 985,956       | 806,540     | 133,867      |                                 |           |       |           |
| 1917.....   |                | 996,501     | 1,313,388     | 1,033,564   | 152,550      |                                 |           |       |           |
| 1918.....   |                | 1,339,342   | 1,982,226     | 858,457     | 150,885      |                                 |           |       |           |
| 1919.....   |                | 1,685,073   | 2,755,094     | 1,038,574   | 252,240      |                                 |           |       |           |
| 1920.....   |                | 1,989,681   | 4,988,130     | 1,521,448   | 214,280      |                                 |           |       |           |
| 1921.....   |                | 2,167,326   | 5,869,119     | 2,127,476   | 360,443      |                                 |           |       |           |
| 1922.....   |                | 2,933,685   | 5,236,628     | 3,583,818   | 536,502      |                                 |           |       |           |
| 1923.....   |                | 3,610,794   | 4,109,084     | 4,162,318   | 470,261      |                                 |           |       |           |
| 1924.....   |                | 3,958,010   | 5,279,985     | 5,995,760   | 633,352      |                                 |           |       |           |
| 1925.....   |                | 9,221,846   | 15,769,357    | 20,144,646  | 1,953,163    |                                 |           |       |           |
| 1926.....   |                | 16,994,275  | 25,695,344    | 41,559,144  | 4,080,040    |                                 |           |       |           |
| 1927.....   |                | 19,996,841  | 23,536,282    | 71,036,201  | 6,951,273    |                                 |           |       | 31,832    |
| 1928.....   |                | 22,143,318  | 24,311,149    | 67,058,513  | 6,196,549    |                                 |           |       |           |
| 1929.....   | 473            | 24,003,969  | 27,602,164    | 77,293,145  | 5,812,729    |                                 |           |       |           |
| 1930.....   | 221            | 19,983,341  | 27,896,744    | 54,741,670  | 3,749,829    |                                 |           |       |           |
| 1931.....   | 293            | 17,245,113  | 13,297,707    | 53,643,509  | 1,875,264    |                                 |           |       |           |
| 1932.....   | 887            | 14,461,476  | 12,277,793    | 40,432,752  | 2,393,920    |                                 |           |       |           |
| 1933.....   | 1,193          | 14,793,286  | 12,398,253    | 39,539,382  | 1,957,634    |                                 |           |       |           |
| 1934.....   | 4,435          | 12,007,550  | 11,331,335    | 40,767,122  | 2,032,849    |                                 |           |       |           |
| Totals..... | \$30,373       | 201,187,371 | \$236,058,021 | 528,099,613 | \$39,974,982 | 24,275                          | \$374,216 |       | \$152,942 |

<sup>1</sup> Includes crushed rock rubble sand, gravel.

<sup>2</sup> Commercial production of petroleum in Ventura County began at least as early as 1874, in the Sulphur Mountain district, but detailed county segregations are not available for the early years.



[illegible]

<sup>4</sup> Quantity estimated, as only values given in reports of those years.

## MINERAL PRODUCTION OF YOLO COUNTY, 1873-1934

| Year        | Quicksilver |           | Sandstone  |          | Miscellaneous stone <sup>1</sup> , value | Miscellaneous and unapportioned |          |                 |
|-------------|-------------|-----------|------------|----------|--|---------------------------------|----------|-----------------|
|             | Flasks      | Value     | Cubic feet | Value    |  | Amount                          | Value    | Substance       |
| 1873.....   | 995         | \$79,928  |            |          |  |                                 |          |                 |
| 1874.....   | 3,000       | 315,540   |            |          |  |                                 |          |                 |
| 1875.....   |             |           |            |          |  |                                 |          |                 |
| 1876.....   | 965         | 42,460    |            |          |  |                                 |          |                 |
| 1877.....   | 1,516       | 56,547    |            |          |  |                                 |          |                 |
| 1878.....   | 1,640       | 53,956    |            |          |  |                                 |          |                 |
| 1879.....   | 1,110       | 33,134    |            |          |  |                                 |          |                 |
| 1880.....   | 422         | 13,082    |            |          |  |                                 |          |                 |
| 1881.....   |             |           |            |          |  |                                 |          |                 |
| 1894.....   |             |           | 2,500      | \$1,000  |  |                                 |          |                 |
| 1895.....   |             |           | 542        | 1,873    |  |                                 |          |                 |
| 1896.....   |             |           | 252        | 378      |  |                                 |          |                 |
| 1897.....   |             |           |            |          |  |                                 |          |                 |
| 1898.....   |             |           | 264        | 384      |  |                                 |          |                 |
| 1899.....   |             |           | 264        | 384      |  |                                 |          |                 |
| 1900.....   |             |           | 908        | 1,760    |  |                                 |          |                 |
| 1901.....   |             |           | 1,540      | 2,300    |  |                                 |          |                 |
| 1902.....   |             |           | 328        | 450      |  |                                 |          |                 |
| 1903.....   |             |           | 280        | 144      |  |                                 |          |                 |
| 1904.....   |             |           | 180        | 720      |  |                                 |          |                 |
| 1905.....   |             |           | 175        | 200      |  |                                 |          |                 |
| 1906.....   |             |           | 160        | 204      |  |                                 |          |                 |
| 1907.....   |             |           | 250        | 350      |  |                                 |          |                 |
| 1908.....   |             |           | 140        | 1,150    |  |                                 |          |                 |
| 1909.....   |             |           |            |          |  |                                 |          |                 |
| 1910.....   |             |           |            |          |  |                                 |          |                 |
| 1911.....   |             |           |            |          |  |                                 |          |                 |
| 1912.....   |             |           |            |          |  |                                 |          |                 |
| 1913.....   |             |           |            |          |  |                                 |          |                 |
| 1914.....   | 15          | 736       |            |          |  |                                 |          |                 |
| 1915.....   | 3           |           |            |          | \$1,200                                  |                                 | \$840    | Other minerals. |
| 1916.....   |             |           |            |          | 300                                      |                                 |          |                 |
| 1917.....   | 3           |           |            |          | 4,300                                    |                                 | 1,261    | Other minerals. |
| 1918.....   | 3           |           |            |          | 17,915                                   |                                 | 3,300    | Other minerals. |
| 1919.....   | 3           |           |            |          | 5,600                                    |                                 | 19,866   | Other minerals. |
| 1920.....   |             |           |            |          | 9,472                                    |                                 |          |                 |
| 1921.....   |             |           |            |          | 14,829                                   |                                 |          |                 |
| 1922.....   |             |           |            |          | 3  |                                 | 13,431   | Unapportioned.  |
| 1923.....   |             |           |            |          | 3  |                                 | 16,957   | Unapportioned.  |
| 1924.....   |             |           |            |          | 3  |                                 | 15,800   | Unapportioned.  |
| 1925.....   |             |           |            |          | 23,060                                   |                                 |          |                 |
| 1926.....   |             |           |            |          | 20,560                                   |                                 |          |                 |
| 1927.....   |             |           |            |          | 17,895                                   |                                 |          |                 |
| 1928.....   |             |           |            |          | 17,200                                   |                                 |          |                 |
| 1929.....   |             |           |            |          | 14,400                                   |                                 |          |                 |
| 1930.....   |             |           |            |          | 2,700                                    |                                 |          |                 |
| 1931.....   |             |           |            |          | 21,500                                   |                                 |          |                 |
| 1932.....   |             |           |            |          | 21,625                                   |                                 |          |                 |
| 1933.....   |             |           |            |          | 16,694                                   |                                 | 129      | Gold.           |
| 1934.....   |             |           |            |          | 37,850                                   | 1 fine oz.                      | 1        | Silver.         |
|             |             |           |            |          |  |                                 | 176      | Gold.           |
| Totals..... | 9,663       | \$595,383 | 7,783      | \$11,297 | \$247,100                                |                                 | \$71,761 |                 |

<sup>1</sup> Includes crushed rock, sand, gravel.<sup>2</sup> Flasks of 76½ pounds, previous to June, 1904; of 75 pounds thence, through 1927; of 76 pounds since January, 1928.<sup>3</sup> See under 'Unapportioned.'

## MINERAL PRODUCTION OF YUBA COUNTY, 1880-1934

| Year   | Gold,<br>value | Silver,<br>value | Platinum |           | Miscel-<br>laneous<br>stone,<br>value | Miscellaneous and unapportioned   |   |  |
|--------|----------------|------------------|----------|-----------|---------------------------------------|---|---|--|
|        |                |                  | Ounces   | Value     |                                       | Amount  | Value   | Substance  |
| 1880   | \$943,860      | \$438            |          |           |                                       |   |   |  |
| 1881   | 800,000        | 1,300            |          |           |                                       |   |   |  |
| 1882   | 750,000        |                  |          |           |                                       |   |   |  |
| 1883   | 455,000        |                  |          |           |                                       |   |   |  |
| 1884   | 250,000        |                  |          |           |                                       |   |   |  |
| 1885   | 207,449        |                  |          |           |                                       |   |   |  |
| 1886   | 149,203        |                  |          |           |                                       |   |   |  |
| 1887   | 162,426        |                  |          |           |                                       |   |   |  |
| 1888   | 150,000        |                  |          |           |                                       |   |   |  |
| 1889   | 112,053        | 115              |          |           |                                       |   |   |  |
| 1890   | 141,781        |                  |          |           |                                       |   |   |  |
| 1891   | 37,576         |                  |          |           |                                       |   |   |  |
| 1892   | 44,218         |                  |          |           |                                       |   |   |  |
| 1893   | 30,839         |                  |          |           |                                       |   |   |  |
| 1894   | 107,480        |                  |          |           |                                       |   |   |  |
| 1895   | 111,482        |                  |          |           |                                       |   |   |  |
| 1896   | 171,688        |                  |          |           |                                       |   |   |  |
| 1897   | 141,638        |                  |          |           |                                       |   |   |  |
| 1898   | 166,865        |                  |          |           |                                       |   |   |  |
| 1899   | 189,927        | 12               |          |           |                                       |   |   |  |
| 1900   | 280,366        | \$2,041          |          |           |                                       |   |   |  |
| 1901   | 188,908        | \$393            |          |           |                                       |   |   |  |
| 1902   | 155,630        | 2                |          |           |                                       |   |   |  |
| 1903   | 125,830        | 41               |          |           |                                       |   |   |  |
| 1904   | 139,528        |                  |          |           |                                       | 400 M.<br>375 tons<br>400 tons<br>2,000 gals.<br>2,000 gals.<br>1,800 gals.<br>1,000 M.<br>550 M. | \$3,000<br>750<br>80<br>800<br>800<br>720<br>10,000<br>6,600<br>568,564 | Brick.<br>Pottery clay.<br>Pottery clay.<br>Mineral water.<br>Mineral water.<br>Mineral water.<br>Brick.<br>Brick.<br>Unapportioned,<br>1900-1909. |
| 1905   | 324,135        | 369              |          |           |                                       |   |   |  |
| 1906   | "              | "                |          |           |                                       |   |   |  |
| 1907   | 1,766,770      | 6,167            |          |           |                                       |   |   |  |
| 1908   | 2,034,486      | 9,997            |          |           | \$5,750                               |   |   |  |
| 1909   | 2,469,865      | 4,156            |          |           | 5,650                                 |   |   |  |
| 1910   | 3,204,273      | 5,372            |          |           |                                       |   |   |  |
| 1911   | 2,997,072      | 5,299            |          |           | 9,318                                 |   |   |  |
| 1912   | 2,753,408      | 6,198            |          |           | 15,526                                |   |   |  |
| 1913   | 2,491,505      | 7,571            |          |           | 8,063                                 |   |   |  |
| 1914   | 2,800,713      | 5,295            | 74       | \$2,377   | 14,895                                |   |   |  |
| 1915   | 2,703,710      | 5,254            | 132      | 4,174     | 149,292                               |   |   |  |
| 1916   | 3,167,723      | 5,934            | 314      | 14,301    | 42,685                                | 4,817 lbs.  | 1,185<br>6,000  | Copper.<br>Other minerals.   |
| 1917   | 3,667,673      | 6,591            | 149      | 8,869     | 28,863                                |   |   |  |
| 1918   | 3,767,933      | 13,796           | 189      | 12,930    | 43,338                                |   | 6,888   | Other minerals.  |
| 1919   | 4,195,732      | 12,276           | 125      | 13,098    | 40,439                                |   |   |  |
| 1920   | 3,467,769      | 16,502           | 113      | 14,395    | 74,943                                |   | 40  | Other minerals.  |
| 1921   | 4,738,248      | 26,135           | 179      | 14,396    | 73,387                                |   | 100   | Other minerals.  |
| 1922   | 2,492,948      | 8,222            | 115      | 11,077    | 75,969                                |   | 100   | Other minerals.  |
| 1923   | 3,150,405      | 6,760            | 158      | 16,974    | 216,890                               |   | 100   | Other minerals.  |
| 1924   | 1,995,434      | 4,461            | 73       | 8,773     | 181,113                               |   | 100   | Other minerals.  |
| 1925   | 2,570,630      | 6,400            | "        |           | 137,288                               |   | 7,276   | Natural gas,<br>platinum.  |
| 1926   | 2,769,703      | 6,398            | "        |           | 133,298                               |   | 11,695  | Natural gas,<br>platinum.  |
| 1927   | 3,468,201      | 6,743            | "        |           | 198,688                               |   | 6,000   | Other minerals.  |
| 1928   | 2,304,377      | 4,910            | "        |           | 202,708                               |   | 17,081  | Other minerals.  |
| 1929   | 1,456,039      | 2,648            | "        |           | 364,326                               |   | 7,358   | Other minerals.  |
| 1930   | 968,814        | 1,255            | "        |           | "                                     |   | 48,330  | Other minerals.  |
| 1931   | 991,976        | 970              | "        |           | "                                     |   | 29,880  | Platinum and<br>miscellaneous<br>stone.  |
| 1932   | 960,749        | 915              |          |           | 27,485                                |   |   |  |
| 1933   | 1,117,844      | 1,179            |          |           | 31,930                                |   | 9   | Unapportioned.   |
| 1934   | 1,911,960      | 2,938            | "        |           | 31,099                                |   | 5,049   | Other minerals.  |
| Totals | \$78,723,842   | \$195,053        | \$1,621  | \$121,364 | \$2,112,943                           |   | \$738,505   |  |

\* Includes crushed rock, sand, gravel.

\* Recalculated to 'commercial' from 'coining value' as originally published.

\* See under 'Unapportioned.'

\* Includes some palladium.

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**CHAPTER NINE**  
**DIRECTORY OF PRODUCERS OF METALLIC AND NON-METALLIC**  
**MINERALS IN CALIFORNIA, 1934**

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**Note—The producers of natural gas and petroleum will be found in the Quarterly Summary of Operations, California Oil Fields, for July, August and September, 1934 (Vol. 20, No. 1).**

## ASBESTOS

| Operator   | Product        | Address                         | Location of mine |
|--|----------------|---------------------------------|------------------|
| <i>Napa County</i><br>U. S. Asbestos Corp., Ltd..... | Asbestine..... | Mills Tower, San Francisco..... | Steel Canyon     |

## BARYTES

| Operator  | Address                          | Location of mine |
|---|----------------------------------|------------------|
| <i>Mariposa County</i><br>National Pigments Co.....   | Russ Bldg., San Francisco.....   | El Portal        |
| <i>Plumas County</i><br>Synthetic Iron Color Co.....  | P.O. Box 1157, Richmond.....     | Almanor          |
| <i>San Bernardino County</i><br>L. P. Haney.....      | Dragoon, Ariz.....               | Barstow          |
| <i>Santa Barbara County</i><br>Girard V. B. Hale..... | P.O. Box 632, Santa Barbara..... | La Brea          |
| <i>Tulare County</i><br>Z. E. Page.....               | 129 Honolulu St., Lindsay.....   | Camp Nelson      |

• Mined only, product not sold.

BENTONITE (FULLER'S EARTH)

| Operator  | Address  | Location of mine                      |
|---|--|---------------------------------------|
| <i>Inyo County</i><br>California Desert Products Co.....<br>Commercial Mineral Co.....                  | 58 Sutter St., San Francisco.....<br>310 Irwin St., San Francisco.....   | Death Valley Junction                 |
| <i>Kern County</i><br>Murco Clay Co.....  | 5525 Randolph St., Maywood.....  | Murco                                 |
| <i>San Benito County</i><br>D. L. Stewart Property, A. P. Stewart, Lessee.....                          | 1052 Vermont St., San Jose.....  | Tres Pinos                            |
| <i>San Bernardino County</i><br>Walter Becker.....<br>California Tale Co.....<br>John T. Thorndyke..... | P.O. Box 374, Red Mountain.....<br>837 Jackson St., Los Angeles.....<br>1014½ N. Mariposa Ave., Los Angeles..... | Red Mountain<br>Hector<br>Code Siding |

BITUMINOUS ROCK

| Operator  | Address                              | Location of mine |
|---|--------------------------------------|------------------|
| <i>Santa Barbara County</i><br>Higgins Quarry, D. A. Sattler, lessee..... | 856 Arguello Rd., Santa Barbara..... | Carpinteria      |
| <i>Santa Cruz County</i><br>Calrock Asphalt Co.....                       | 525 Market St., San Francisco.....   | Majors           |

## BORATES

| Operator  | Address                                     | Location of mine      |
|---|---|-----------------------|
| <i>Inyo County</i><br>Pacific Alkali Co.....  | 1209 Pacific Mutual Bldg., Los Angeles..... | Bartlett              |
| <i>Kern County</i><br>Pacific Coast Borax Co.....   | 1014 Central Bldg., Los Angeles.....        | Kramer                |
| <i>San Bernardino County</i><br>American Potash and Chemical Corp.....<br>West End Chemical Co..... | Trona.....<br>Syndicate Bldg., Oakland..... | Trona<br>Searles Lake |

## BROMINE

| Operator   | Address              | Location of mine |
|--|----------------------|------------------|
| <i>Alameda County</i><br>California Chemical Corp.....   | Box 8-A, Newark..... | Newark           |
| <i>San Diego County</i><br>California Chemical Corp..... | Box 8-A, Newark..... | San Diego        |

## CALCIUM CHLORIDE

| Operator  | Address   | Location of mine |
|---|---|------------------|
| <i>San Bernardino County</i><br>California Rock Salt Co.....<br>Saline Products, Inc..... | 2465 Hunter St., Los Angeles.....<br>2000 Santa Fe Ave., Los Angeles..... | Amboy<br>Amboy   |



## CARBON DIOXIDE GAS

| Operator   | Address | Location of wells |
|--|---------|-------------------|
| <i>Imperial County</i><br>Pacific-Imperial Dri-Ice, Inc., Carl M. Einhart, Pres. | Niland  | Niland            |

## CEMENT

| Operator   | Address   | Location of mine      |
|--|---|-----------------------|
| <i>Calaveras County</i><br>Calaveras Cement Co.  | 315 Montgomery St., San Francisco                                 | San Andreas           |
| <i>Contra Costa County</i><br>Henry Cowell Lime and Cement Co.                                     | 2 Market St., San Francisco                                       | Cowell                |
| <i>Kern County</i><br>Monolith Portland Cement Co.   | Bartlett Bldg., Los Angeles                                       | Monolith              |
| <i>Los Angeles County</i><br>Blue Diamond Corp.  | 1650 S. Alameda St., Los Angeles                                  | Los Angeles           |
| <i>Merced County</i><br>Yosemite Portland Cement Co.   | Merced  | Merced                |
| <i>Riverside County</i><br>Riverside Cement Co.  | 621 S. Hope St., Los Angeles                                      | Riverside             |
| <i>San Bernardino County</i><br>California Portland Cement Co.<br>Southwestern Portland Cement Co. | 601 W. Fifth St., Los Angeles<br>503 Roosevelt Bldg., Los Angeles | Colton<br>Victorville |
| <i>San Mateo County</i><br>Pacific Portland Cement Co.   | 111 Sutter St., San Francisco                                     | Redwood City          |
| <i>Santa Cruz County</i><br>Santa Cruz Portland Cement Co.   | Crocker Bldg., San Francisco                                      | Davenport             |

## CHROMITE

| Operator   | Remarks | Address              | Location of mine |
|--|---------|----------------------|------------------|
| <i>Placer County</i><br>Daniel Sullivan.....                                 | s       | Towle.....           | Dutch Flat       |
| <i>San Luis Obispo County</i><br>Pick & Shovel Mine, P. A. H. Arata Est..... | o       | San Luis Obispo..... | Goldtree         |
| <i>Tuolumne County</i><br>McCormick Chrome Mine, Robert McCormick.....       | o       | Jamestown.....       | Jamestown        |

s. Shipped ore, mined prior to 1933. o. Both mined and shipped in 1933.

## CLAY

(Including producers of crude clay and manufacturers of brick, tile, porcelain, etc.)

| Operator   | Remarks | Address                                    | Location of plant or pit |
|--|---------|--|--------------------------|
| <i>Alameda County</i><br>California Pottery Co.....                                  | a, c    | Niles.....                                 | Niles                    |
| N. Clark & Sons.....   | a, b, c | 116 Natomas St., San Francisco.....        | Alameda                  |
| Livermore Fire Brick Work and California Brick Plant, W. S. Dickey Clay Mfg. Co..... | a, b, c | 116 New Montgomery St., San Francisco..... | Livermore and Fabrico    |
| Electrical Porcelain Works.....  | a       | 2416 6th St., Berkeley.....                | Berkeley                 |
| Interlocking Tile Co.....  | a, c    | Niles.....                                 | Niles                    |
| Kraftile Co., L. J. Layton.....  | a       | Decoto.....                                | Decoto                   |
| M & S Tile Co.....   | a, c    | 569 3d St., Oakland.....                   | Pleasanton               |
| Remillard Brick Co., R. C. Giroux, Secy.....   | b       | 420 Kains Ave., Albany, via Berkeley.....  | Albany                   |
| Technical Porcelain and China Ware Co.....   | a       | 62d and Green Sts., Emeryville.....        | Emeryville               |
| Emeryville Porcelain Works, Westinghouse Elec. and Mfg. Co.....                      | a       | 1285 Hearst Ave., Berkeley.....            | Berkeley                 |
| Walrich Pottery.....   |         |  |                          |
| <i>Amador County</i><br>M. J. Bacon.....   | c       | Ione.....                                  | Carbondale               |
| Ione Clay and Sand Pit, Cal. Mineral Products Co.....                                | c, f    | Kohl Bldg., San Francisco.....             | Ione                     |
| Carlyle Clay Deposits, E. E. Tremain.....  | c       | Buena Vista, via R.F.D., Ione.....         | Buena Vista              |
| N. Clark & Sons.....   | c       | 116 Natoma St., San Francisco.....         | Ione                     |

|  |         |  |                           |
|--|---------|--|---------------------------|
| <i>Clay Corp. of California</i>                    | c       | 1267 Russ Bldg., San Francisco.        | Ione                      |
| Ione Clay Pit, W. S. Dickey Clay Mfg. Co.          | c       | 116 New Montgomery St., San Francisco. | Ione                      |
| Ione Fire Brick Co., J. T. Roberts, Mgr.           | b       | 1267 Russ Bldg., San Francisco.        | Ione                      |
| Newman Clay Co., C. W. Forbes, lessee.             | c       | Ione.                                  | Ione                      |
| <i>Calaveras County</i>                            |         |  |                           |
| California Pottery Co.                             | c       | Niles.                                 | Valley Springs            |
| <i>Contra Costa County</i>                         |         |  |                           |
| California Art Tile Corp.                          | a.      | Box 1116, Richmond.                    | Richmond                  |
| Old Mission Tile Co.                               | a, c    | 1 20th St., Richmond.                  | San Pablo                 |
| Port Costa Brick Works, C. G. Berg, Pres.          | b       | 6th and Berry Sts., San Francisco.     | Port Costa                |
| Standard Sanitary Mfg. Co., H. W. Oreeger, Mgr.    | a       | Box W, Richmond.                       | Richmond                  |
| Stockton Fire Brick Co.                            | b       | Russ Bldg., San Francisco.             | Pittsburg                 |
| United Materials & Richmond Brick Co., Ltd.        | a, b, c | P.O. Box 7, Richmond.                  | Richmond                  |
| <i>Fresno County</i>                               |         |  |                           |
| Craycroft Brick Co.                                | a, b    | Griffith-McKenzie Bldg., Fresno.       | Fresno                    |
| <i>Humboldt County</i>                             |         |  |                           |
| D. J. Thompson Brick Co.                           | a, b, c | Box 16, Myrtle Ave., Eureka.           | Eureka                    |
| <i>Inyo County</i>                                 |         |  |                           |
| California Desert Products Co.                     | e       | 58 Sutter St., San Francisco.          | Death Valley              |
| Commercial Minerals Co.                            | c       | 310 Irwin St., San Francisco.          |                           |
| <i>Kern County</i>                                 |         |  |                           |
| Bakersfield Rock & Gravel Co.                      | d       | Box 395, St. A, Bakersfield.           | Bakersfield               |
| Bakersfield Sandstone Brick Co., Jas. Curran, Mgr. | b       | Bakersfield.                           | Bakersfield               |
| Muroc Clay Co.                                     | c       | 5525 Randolph St., Maywood.            | Muroc                     |
| Mojave Rotary Mud Co., Ltd.                        | d       | Box 174, Los Nietos.                   | Muroc                     |
| Vitreux Co.  | c       | 5050 Pacific Blvd., Los Angeles.       | Cantil                    |
| <i>Los Angeles County</i>                          |         |  |                           |
| Alhambra Kilns Inc., L. C. Merwin.                 | a       | Alhambra.                              | Alhambra and Santa Monica |
| American Refractories Co.                          | a, b    | 3232 Alosta St., Los Angeles.          | Los Angeles               |
| Angulo Tile Plant, R. F. Angulo & Sons.            | a, c    | Reesda.                                | Reesda                    |
| Art Tile Co.                                       | a       | 2304 E. 52d St., Los Angeles.          | Vernon                    |
| Batchelder-Wilson Tile Co.                         | a       | 2633 Artesian St., Los Angeles.        | Los Angeles               |
| J. A. Bauer Pottery Co.                            | a       | 415 W. Ave. 33, Los Angeles.           | Los Angeles               |
| J. Booth.  | a       | 1775 Stanford, Santa Monica.           | Santa Monica              |

a. Clay products. b. Brick and hollow building tile. c. Crude clay. d. Oil-well drilling-mud. e. Filtering clay. f. Fire sand.

CLAY—Continued  
(Including producers of crude clay and manufacturers of brick, tile, porcelain, etc.)

| Operator  | Remarks | Address                                    | Location of plant or pit                                     |
|---|---------|--|--|
| <i>Los Angeles County—Continued</i>                   |         |  |  |
| Builders Brick Co., Ltd.                              | b       | 177th and Western Aves., Moneta            | Moneta   |
| Calcoo Tile Mfg. Corp.                                | a       | 4240 Santa Ana, South Gate                 | South Gate   |
| California Clay Prod. Co., Ltd.                       | a, c    | Box 568, Whittier                          | Whittier   |
| Claycroft Potteries, Fred H. Robertson                | a       | 3101 San Fernando Blvd., Los Angeles       | Los Angeles  |
| Consolidated Brick & Tile Co., Ltd.                   | a, b, c | 2600 Colorado Ave., Santa Monica           | Los Angeles, Long Beach, Santa Monica                        |
| Davidson Brick Co.                                    | b, c    | 4701 Floral Dr., Los Angeles               | Los Angeles  |
| Eller California Co.                                  | a       | 4100 Alameda, Los Angeles                  | Arcadia  |
| Enesco Refractories Co.                               | a, b    | 5601 S. Boyle Ave., Vernon                 | Vernon   |
| Tropico, L. A. & S. M. Plants, Gladding, McBean & Co. | a, b, c | 660 Market St., San Francisco              | Tropico, Los Angeles, Santa Monica, Hermosa Beach and Vernon |
| Higgins Brick & Tile Works, James R. Higgins          | a, b, c | P. O. Box 1225, Moneta                     | Moneta   |
| Italian Terra Cotta Co.                               | a       | 1149 Mission Rd., Los Angeles              | Los Angeles  |
| K & K Brick Co., Geo. H. Snyder, Pres.                | b       | 606 Union Bank Bldg., Los Angeles          | Bishop Canyon  |
| Long Beach Brick Co., Inc., H. A. Havner, Mgr.        | b       | 422 E. Broadway, Long Beach                | Long Beach   |
| Markoff Mosaic Tile Corp.                             | a       | 1107 E. Redondo Blvd., Inglewood           | Inglewood  |
| Myers Pottery Co.                                     | a       | 2318 E. 52d St., Los Angeles               | Los Angeles  |
| Pacific Clay Products                                 | a, b, c | 650 Chamber of Commerce Bldg., Los Angeles | Los Angeles and Los Nietos                                   |
| Pomona Brick Co., Wm McMullen, Mgr.                   | b       | Pomona                                     | Pomona   |
| Pomona Tile Mfg. Co.                                  | a       | Pomona                                     | Pomona   |
| San Vallee Tile Kilns, R. F. Stubver, Mgr.            | a, c    | 6601 Wilbur, Reseda                        | Reseda   |
| Santa Catalina Island Co., Wm. Wrigley, Jr.           | a, b, c | Avalon                                     | Santa Catalina Island  |
| St. Louis Fire Brick and Clay, Joseph Mesmer          | a, b    | 3050 E. Slauson St., Los Angeles           | Los Angeles  |
| Simons Brick Co., Walter R. Simons                    | a, b, c | 1195 S. Boyle Ave., Los Angeles            | Los Angeles  |
| Standard Brick Co.                                    | b       | 1760 S. Sato St., Los Angeles              | Los Angeles  |
| Star Brick Co.  | b       | Moneta                                     | Moneta   |
| Tillotson Clay Products                               | a, b    | 3363 Fruitland Rd., Vernon                 | Vernon   |
| Tudor Potteries                                       | a       | 2406 E. 58th St., Los Angeles              | Los Angeles  |
| Vernon Potteries                                      | a       | 2300 E. 52d St., Los Angeles               | Vernon   |
| Vitretrax Corp.                                       | a, b    | 5100 Pacific Ave., Los Angeles             | Vernon   |
| <i>Marin County</i>                                   |         |  |  |
| McNair Brick Co.                                      | a, b    | McNear Point, San Rafael                   | McNear   |

|  |         |  |             |                 |
|--|---------|--|-------------|-----------------|
| <i>Monterey County</i>                                       |         |  |             |                 |
| <i>Castroville Clay Products Co.</i>                         |         | Castroville                                      | Castroville | Castroville     |
| <i>Orange County</i>   |         |  |             |                 |
| Gladding, McBean & Co.                                       | a, c    | 660 Market St., San Francisco                    |             |                 |
| La Balsa Tile Co., A. N. Griffith                            | c       | R.F.D. 1, Box 174, Huntington Beach              |             |                 |
| Mission Clay Products Co.                                    | a, b, c | Olive  |             | Smeltzer        |
| C. O. Newton   | a, b, c | 823 Hickory St., Santa Ana                       |             | Olive           |
|  | c       |  |             | Capistrano      |
| <i>Placer County</i>   |         |  |             |                 |
| Clay Corp. of Cal.   | c       | 1267 Russ Bldg., San Francisco                   |             | Lincoln         |
| Gladding, McBean & Co.                                       | a, b, c | 5th floor, 660 Market St., San Francisco         |             | Lincoln         |
| Lincoln Clay Products Co., M. J. Dillman, Mgr.               | c       | Lincoln  |             | Lincoln         |
| <i>Riverside County</i>                                      |         |  |             |                 |
| Alberhill Coal and Clay Co.                                  | c       | 2406 E. 58th St., Los Angeles                    |             | Alberhill       |
| C. R. Freeman  | c       | Courthouse, Riverside                            |             | Corona          |
| Gladding, McBean & Co.                                       | a, b, c | 660 Market St., San Francisco                    |             | Alberhill       |
| Los Angeles Brick Co.  | a, b, c | 1078 Mission Rd., Los Angeles                    |             | Alberhill       |
| Geo. H. Morton   | c       | Elsinore   |             | Elsinore        |
| Pacific Clay Products  | c       | 650 Chamber of Commerce Bldg., Los Angeles       |             | Corona          |
| Temescal Clay Co.  | c       | 5601 S. Boyle Ave., Los Angeles                  |             | Temescal        |
| <i>Sacramento County</i>                                     |         |  |             |                 |
| Cannon & Co.   | a, b, c | Box 802 Sacramento                               |             | Ben Ali         |
| H. C. Muddox, Jessie E. Muddox, owner                        | a, b    | 30th and L Sts., Sacramento                      |             | Sacramento      |
| Panama Pottery Co.   | a       | Box 1478, R.F.D. No. 4, 24th St. Rd., Sacramento |             | Sacramento      |
| Sacramento Brick Co.   | b       | 1400 Front St., Sacramento                       |             | Sacramento      |
| Valley Brick Co.   | b       | P.O. Box 1180, Sacramento                        |             | Sacramento      |
| <i>San Benito County</i>                                     |         |  |             |                 |
| D. L. Stewart Property, A. P. Stewart, lessee                | e       | 1052 Vermont, San Jose                           |             | Tres Pinos      |
| <i>San Bernardino County</i>                                 |         |  |             |                 |
| Walter Becker  | e       | P.O. Box 374, Red Mountain                       |             | Scarles Station |
| California Tile Co.  | e       | 837 Jackson St., Los Angeles                     |             | Hector          |
| Hancock Brick Yard, C. P. Hancock & Son                      | b       | 4330 Lemon St., Riverside                        |             | Highgrove       |
| Hart Clay Deposit, W. K. S. Keoch, lessee                    | c       | 2022 Thayer Ave., Los Angeles                    |             | Goffs           |
| Kennedy Clay Pit, John Kennedy                               | c       | 1306 1/2 Warren Ave., Los Angeles                |             | Daggett         |
| Standard Sanitary Mfg. Co., Pacific Mines, P. R. Jones, Mgr. | c       | Campo  |             | Hart            |
| Velvet-White Mines, E. J. Driscoll                           | c       | 4721 Second Ave., Los Angeles                    |             | Oro Grande      |

a. Clay products. b. Brick and hollow building tile. c. Crude clay. e. Filtering clay.

CLAY—Continued  
(Including producers of crude clay and manufacturers of brick, tile, porcelain, etc.)

| Operator   | Remarks | Address                                    | Location of plant or pit |
|--|---------|--|--------------------------|
| <i>San Diego County</i>                          |         |  |                          |
| Pacific Clay Products Co.....                    | c       | 650 Chamber of Commerce Bldg., Los Angeles | Farr Station             |
| Union Brick Co., J. W. Rice.....                 | b       | 3565 3d St., North San Diego               | Rose Canyon              |
| Vitrified Products Corp.....                     | a, b, c | 2841 Jefferson St., North San Diego        | North San Diego          |
| <i>San Joaquin County</i>                        |         |  |                          |
| San Joaquin Brick Co., J. F. Stein, Secy..       | b       | 33 S. El Dorado St., Stockton              | Stockton                 |
| Stockton Brick & Tile Co.....                    | b       | McKinley Ave., Stockton                    | Stockton                 |
| <i>San Luis Obispo County</i>                    |         |  |                          |
| San Luis Obispo Brick Works, Faulstich Bros..... | a, b    | San Luis Obispo                            | San Luis Obispo          |
| <i>San Mateo County</i>                          |         |  |                          |
| Richmond Potteries, Inc.....                     | a       | Box 187, South San Francisco               | South San Francisco      |
| <i>Santa Barbara County</i>                      |         |  |                          |
| Gamble Brick Co.....                             | b       | Santa Maria                                | Santa Maria              |
| <i>Santa Clara County</i>                        |         |  |                          |
| Coyote Creek Clay Beds, L. R. Lenfest.....       | c       | 1195 E. Santa Clara St., San Jose          | San Jose                 |
| Garden City Pottery, N. J. Mahone.....           | a       | 560 N. 6th St., San Jose                   | San Jose                 |
| Gladding Bros. Mfg. Co.....                      | a, b, c | South 3d and Keyes Sts., San Jose          | San Jose                 |
| Handcraft Tile Co., L. W. Austin et al.....      | a       | R. F. D. 2, Box 121A, San Jose             | San Jose                 |
| Remillard Brick Co.....                          | b       | 569 3d St., Oakland                        | San Jose                 |
| San Jose Brick Co.....                           | b       | P.O. Box 274, San Jose                     | San Jose                 |
| S. & S. Tile Co.....                             | a       | 1881 S. 1st St., San Jose                  | San Jose                 |
| <i>Stanislaus County</i>                         |         |  |                          |
| Coopertown Clay Deposit, J. H. Hornsby           | c       | 651 Cumberland St., Pittsburg              | Coopertown               |
| V. J. Winkler.....                               | c       | Knights Ferry                              | Knights Ferry            |
| <i>Tulare County</i>                             |         |  |                          |
| San Joaquin Materials Co.....                    | b       | 744 G St., Fresno                          | Exeter                   |
| <i>Ventura County</i>                            |         |  |                          |
| Peoples Lumber Co., C. E. Bonestel, Mgr.....     | a, b, c | 708 E. Meta St., Ventura                   | Ventura                  |
| Dent Clay Pit, Shell Oil Co.....                 | d       | Shell Bldg., San Francisco                 | Ventura                  |

a. Clay products. b. Brick and hollow building tile. c. Crude clay. d. Oil-well drilling-mud.

COAL

| Operator   | Address                          | Location of mine |
|--|----------------------------------|------------------|
| <i>Amador County</i><br>Buena Vista Coal Mining Co., J. J. Morras, Supt.   | Ione, c/o R.F.D.                 | Buena Vista      |
| <i>Monterey County</i><br>Monterey Coal Corp.                              | 111 Sutter St., San Francisco.   | Stone Canyon     |
| <i>Santa Cruz County</i><br>Look Coal Mine, C. R. Look                     | 44 Clay St., Santa Cruz.         | Corralitos       |
| <i>Trinity County</i><br>Big Bar Coal Mining Co., E. O. E. Klippahn, Secy. | R.F.D. 1, Box 92A, Grass Valley. | Big Bar          |

COPPER

*Principal Copper Producers in California in 1934*

| Mine   | Operator  | Address   | Location of mine                               |
|--|---|---|--|
| <i>Inyo County</i><br>Estelle & Cerro Gordo.                                 | Estelle Mines Corp.   | 972 S. 4th St., Los Angeles.  | Keeler   |
| <i>Nevada County</i><br>Empire, North Star, Murehie<br>Empress.<br>San Juan. | Empire-Star Mines Co., Ltd.<br>Republic Gold Mining Corp.<br>Bradley Mining Co. | Rm. 1507, 14 Wall St., New York, N. Y.<br>Box 914, Grass Valley.<br>Crocker Bldg., San Francisco. | Grass Valley<br>Grass Valley<br>North San Juan |
| <i>Shasta County</i><br>Hornet.  | Mountain Copper Co., Ltd.   | Balfour Bldg., San Francisco.   | Matheson                                       |

## DIATOMITE (DIATOMACEOUS EARTH)

| Operator  | Address   | Location of quarry or mine |
|---|---|----------------------------|
| <i>Fresno County</i><br>Mineral Products Mfg. Co., T. H. Elliott and L. J. Allen.....<br>A. P. Shepard.....         | 3464 Ventura St., Fresno.....<br>3101 Mariposa St., Fresno..... | Mendota<br>Mendota         |
| <i>Los Angeles County</i><br>The Dicalite Co.....   | 756 S. Broadway, Los Angeles.....                               | San Pedro                  |
| <i>Monterey County</i><br>Pacatome, Ltd.....  | Bradley.....  | Bradley                    |
| <i>Santa Barbara County</i><br>Johns-Manville Products Corp.....<br>National Silica Products Co., C. E. Miller..... | Lompoc.....<br>1201 Bryant St., Palo Alto.....                  | Lompoc<br>Lompoc           |

## DOLOMITE

| Operator  | Address   | Location of quarry     |
|---|---|------------------------|
| <i>Inyo County</i><br>Dolomite Products Co.....<br>Inyo Marble Co.....          | 103 N. Kingsley Dr., Los Angeles.....<br>361 N. Avenue 22, Los Angeles..... | Lone Pine<br>Lone Pine |
| <i>Monterey County</i><br>Pacific Coast Steel Corp., Sterling Ranch Quarry..... | 20th and Illinois Sts., San Francisco.....                                  | Natividad              |



FELDSPAR

| Operator   | Address    | Location of mine |
|--|------------|------------------|
| <i>San Diego County</i><br>Standard Sanitary Mfg. Co., P. R. Jones, Mgr..... | Campo..... | Campo            |

FLUORSPAR

| Operator  | Address                           | Location of mine |
|---|-----------------------------------|------------------|
| <i>San Bernardino County</i><br>C. J. Whitlock..... | 987 25th St., San Bernardino..... | Afton            |

GEMS

| Operator   | Variety  | Address                              | Location of mine |
|--|--|--------------------------------------|------------------|
| <i>Counties, various</i><br>Felker Research Laboratory, Max N. Felker..... | Rose quartz,<br>blue-agate,<br>mottled jasper,<br>touchstone | 3321 Emerald St., Torrance.....      |                  |
| <i>Fresno County</i><br>C. M. Carter.....                                  | Topaz  | Youngs P.O., El Dorado Co.....       | Friant           |
| <i>Riverside County</i><br>Carniger Mine, H. F. Heather.....               | Iceland-spar   | 236 S. Oak Knoll Ave., Pasadena..... | Indio            |
| <i>Tulare County</i><br>Janolko Bros.....                                  | Onyx,<br>vesuvianite   | R.F.D. 1, Box 688, Porterville.....  | Porterville      |

## GOLD

*Principal Gold Producers in California out of a Total of 2,651 Placer Operators and Lode Mines in 1934*

| Mine                          | Type of mine | Operator   | Address                            | Location of mine |
|-------------------------------|--------------|--|------------------------------------|------------------|
| <i>Amador County</i>          |              |  |                                    |                  |
| Amador Star                   | a            | West America Cons. Gold Mines, Inc.              | P.O. Box 106, Plymouth.            | Plymouth         |
| Argonaut                      | a            | Argonaut Mining Co., Ltd.                        | Jackson.                           | Jackson          |
| Argonaut Tailing Dump         | c            | Hill & Hambric.                                  | Jackson.                           | Camanche         |
| Buena Vista                   | g            | Alvah G. Ekel.                                   | Ione.                              | Sutter Creek     |
| Central Eureka and Old Eureka | a            | Central Eureka Mining Co.                        | 111 Sutter St., San Francisco.     | Sutter Creek     |
| Central Eureka Tailings Dump  | c            | Central Tailings Co.                             | 564 Market St., San Francisco.     | Marfell          |
| Kennedy                       | a            | Kennedy Mining and Milling Co.                   | 519 California St., San Francisco. | Camanche         |
| Lancha Plana                  | e            | Lancha Plana Gold Dredging Co.                   | Camanche.                          | Jackson          |
| Levezzo (Petersen)            | a            | W. F. Petersen                                   | Jackson.                           | Pine Grove       |
| Pioneer                       | a            | Pioneer Lucky Strike Mining Co.                  | Pine Grove.                        | Plymouth         |
| Plymouth (Pacific)            | c            | Plymouth Con. Mines Co., Ltd., Elwood, Ore.      | Plymouth.                          | Jackson          |
| Valparaiso                    | a            | Valparaiso Mining Co.                            | Box 414, Jackson.                  |                  |
| <i>Butte County</i>           |              |  |                                    |                  |
| Cohan-Gooday                  | f            | Geni Con. Mines Co., Ltd.                        | Holbrook Bldg., San Francisco.     | Magalia          |
| Jack Ranch                    | a            | S. M. Allen                                      | R.F.D. 2, Box, 105, Oroville.      | Oroville         |
| New Era                       | f            | J. A. Gaumer                                     | Paradise.                          | Paradise         |
| Surcease                      | a            | Hoefling Bros., Inc.                             | R.F.D. 4, Box 214, Chico.          | Yankee Hill      |
| Thurmon Hill                  | e            | Oroville Gold Dredging Co.                       | Box 86, Oroville.                  | Oroville         |
| Wyandotte Creek               | b            | H. F. England                                    | Box 3, Oroville.                   | Oroville         |
| <i>Calaveras County</i>       |              |  |                                    |                  |
| Boston                        | a            | Boston, Mokelumne Mining Co., F. C. Moore, Supt. | Mokelumne Hill.                    | Mokelumne Hill   |
| Calaveras Central             | f            | Calaveras Central Gold Mining Co., Ltd.          | Hobart Bldg., San Francisco.       | Angels Camp      |
| Carlson Hill                  | a            | Carlson Hill Gold Mine Corp.                     | Sonora.                            | Melons           |
| Easy Bird                     | a            | Lucky Joe Gold Mining Co.                        | Box 292, Jackson.                  | Mokelumne Hill   |
| Gold Gravel                   | b            | Gold Gravel Product Inc.                         | Wallace.                           | Wallace          |
| Golden River                  | f            | Golden River Mining Co.                          | Angels Camp.                       | Angels Camp      |
| Lloyd Placer                  | f            | Charles W. Nielson                               | San Andreas.                       | San Andreas      |
| Osborn                        | a            | Belmont Osborn Gold Mine.                        | 381 Bush St., San Francisco.       | Altaville        |
| Royal                         | a            | F. S. Tower                                      | Milton.                            | Milton           |
| South Gulch                   | a            | E. L. Lilly                                      | 1844 Carmel Ave., Stockton.        | Jenny Lind       |
| Spring Valley                 | b            | Spring Valley Mine Co.                           | R.F.D. 3, Box 133, Stockton.       | Spring Valley    |
| Vallecito-Western             | f            | Tonapah Belmont Dev. Co., (Lessee)               | Angels Camp.                       | Angels Camp      |

|                         |                                      |  |   |              |
|-------------------------|--------------------------------------|--|---|--------------|
| <b>El Dorado County</b> |                                      |  |   |              |
| a                       | Alhambra.....                        | Jensen and Schneider.....                          | R.F.D. 7, Box 2466, Sacramento.....                 | Kelsey       |
| a                       | Beebe.....                           | The Beebe Gold Mining Co.....                      | Crocker Bldg., San Francisco.....                   | Georgetown   |
| a                       | Black Oak.....                       | Edwin W. Wilson.....                               | Garden Valley.....                                  | Plymouth     |
| a                       | Briercliffe.....                     | Briercliffe Mines Ltd., R. O. Morrow.....          | Box 156, Plymouth.....                              |              |
| a                       | Crystal.....                         | Dennis C. Childers.....                            | 4335 Edgewood Ave., Oakland.....                    |              |
| e                       | Gold Bug, Hickman and Blue Rock..... | Canyon Creek Dredge, J. E. Groudager, Trustee..... |   |              |
| a                       | Gold Reserve.....                    | George W. Peltier.....                             | Russ Bldg., San Francisco.....                      | Georgetown   |
| a                       | Kelsey.....                          | Kelsey Mining Co., Inc., Egbert T. Willard.....    | c/o Bank of America, 8th and J St., Sacramento..... | Placerville  |
| a                       | Middle End.....                      | Melton Gold Mines, Ltd.....                        | 519 California St., San Francisco.....              | Kelsey       |
| a                       | Montezuma.....                       | Montezuma-Apex Mining Co.....                      | Placerville.....                                    | Grizzly Flat |
| a                       | Slate Mountain.....                  | R. W. Brooke.....                                  | Box M., Placerville.....                            | El Dorado    |
| a                       | Slinger.....                         | Middle Ford Gold Mining Co.....                    | Box 222, Placerville.....                           | Georgetown   |
|                         |                                      |  | Box M, Auburn.....                                  | Greenwood    |
| b                       | <b>Fresno County</b>                 |  |   |              |
|                         | Grant Service Gravel Pit.....        | Grant Service Rock Co.....                         | 523 Patterson Bldg., Fresno.....                    | Friant       |
| g                       | <b>Humboldt County</b>               |  |   |              |
|                         | Pearch.....                          | P. L. Young.....                                   | Orleans.....  | Orleans      |
| a                       | <b>Inyo County</b>                   |  |   |              |
| a                       | Cardinal.....                        | Cardinal Gold Mining Co.....                       | Bishop.....   | Bishop       |
| a                       | Cleveland.....                       | Lange Bros.....                                    | Big Pine.....                                       | Big Pine     |
| a                       | Paleta.....                          | Charles H. Olds, Jr.....                           | Bishop.....   | Bishop       |
| a                       | Reward.....                          | Inyo Mines, Inc.....                               | Yermo.....  | Yermo        |
| a                       | <b>Kern County</b>                   |  |   |              |
| a                       | Buckboard.....                       | E. R. Ferry.....                                   | 308 E. Lomita, Glendale.....                        | Randsburg    |
| a                       | Big Blue.....                        | Big Blue Mining Co.....                            | 459 Holbrook Bldg., San Francisco.....              | Kerrville    |
| a                       | Big Dyke.....                        | Anglo American Mining Corp.....                    | 1005 Mills Bldg., San Francisco.....                | Randsburg    |
| a                       | Butte Lode.....                      | Butte Lode Mining Co.....                          | 1231 Roosevelt Bldg., Los Angeles.....              | Randsburg    |
| a                       | Drunkards Dream.....                 | Drunkards Dream Mine Co., J. C. Walser.....        | 409 18th St., Bakersfield.....                      | Caliente     |
| a                       | Elephant-Eagle.....                  | Elephant-Eagle Mines Co.....                       | Mojave.....   | Mojave       |
| a                       | Farrington.....                      | Bright and Burton.....                             | Rosamond.....                                       | Rosamond     |
| a                       | King Solomon.....                    | International Mining & Milling Co.....             | 183 N. Martel Ave., Los Angeles.....                | Johannesburg |
| c                       | King Solomon-Consolidated.....       | Louis Warnkins et al.....                          | Randsburg.....                                      | Johannesburg |
| a                       | Minnehaha.....                       | E. B. Maginnis et al.....                          | P.O. Box 228, Randsburg.....                        | Randsburg    |
| a                       | Silver Queen.....                    | Golden Queen Mining Co.....                        | Pacific Mutual Bldg., Los Angeles.....              | Mojave       |
| a                       | Soledad.....                         | W. Campbell et al.....                             | Mojave.....   | Mojave       |
| a                       | Standard.....                        | C. A. Heyen and O. J. Bruce.....                   | Mojave.....   | Mojave       |
| a                       | Susanna.....                         | Rogers & Gentry.....                               | Fairmont.....                                       | Fairmont     |
| a                       | Tropico.....                         | Burton Bros., Inc., Lessees Tropico Mine.....      | Rosamond.....                                       | Rosamond     |
| a                       | Yellow Aster.....                    | Anglo American Mining Co.....                      | 1005 Mills Bldg., San Francisco.....                | Randsburg    |
| c                       | Yellow Aster Dump.....               | Randsburg-Aster Gold Mining Co.....                | Johannesburg.....                                   | Randsburg    |

a. Lode mine. b. Placer mine. c. Tailing dump. e. Dredge. f. Drift mine. g. Hydraulic mining.

18—24511

GOLD—Continued  
Principal Gold Producers in California out of a Total of 2,651 Placer Operators and Lode Mines in 1934

| Mine   | Type of mine                                   | Operator   | Address  | Location of mine  |
|--|--|--|--|---|
| <i>Lassen County</i><br>Juniper-----   | a  | George J. Harper-----  | Adin-----  | Adin  |
| <i>Los Angeles County</i><br>Big Horn-----<br>New York-----  | a<br>a   | Big Horn Mining Co-----<br>Governor Mining Co., C. H. McWilliams-----  | Valero-----<br>725 S. Figueroa St., Los Angeles-----   | Valero<br>Frazier Park  |
| <i>Mariposa County</i><br>Buffalo-----<br>Dilla-----<br>Doss-----<br>Original (Clearing House)-----<br>Pine Tree & Josephine-----<br>Pyramid-----<br>Ruth Pierce-----<br>Texas Hill-----<br>Virginia-----                  | a<br>a<br>a<br>a<br>a<br>a<br>a<br>c<br>a<br>a | Gabriel Mining Co-----<br>E. R. Baker-----<br>The Doss Mining Co-----<br>Original Mining and Milling Co-----<br>Pacific Mining Co-----<br>Pyramid Leasing Co-----<br>Tennessee Mining Co-----<br>Texas Hill Mining Co., Frederick R. Stewart-----<br>Virginia Mining Co----- | Midpines-----<br>Mariposa-----<br>Hornitos-----<br>Merced-----<br>1022 Crocker Bldg., San Francisco-----<br>575 W. San Carlos St., San Jose-----<br>Hornitos-----<br>125 Market St., San Francisco-----<br>Coulterville-----<br>Coulterville | Midpines<br>Whitlock<br>Hornitos<br>Incline<br>Bagby<br>Hornitos<br>Hornitos<br>Coulterville<br>Coulterville            |
| <i>Merced County</i><br>Merced Unit-----<br>Snelling Dredge-----   | c<br>c   | Yuba Consolidated Goldfields-----<br>Snelling Dredging Co-----   | 351 California St., San Francisco-----<br>Snelling-----  | Snelling<br>Snelling  |
| <i>Mono County</i><br>Long Chance and Vanelmart-----<br>Standard-----  | a<br>a   | H. A. Van Loon-----<br>J. S. Cain-----   | Bishop-----<br>Bodie-----  | Hammel<br>Bodie   |
| <i>Nevada County</i><br>Alta Hill-----<br>Ancho Erie-----<br>Canada Hill Hussey and Queen Lil-----<br>Davis Flat-----<br>Empire, North Star, Murchie-----<br>Empress-----<br>Golden Center and Schroeder-----<br>Hoge----- | b<br>a<br>a<br>b<br>a<br>a<br>a<br>a           | Cooley Butler-----<br>Ancho Erie Mining Co-----<br>West Mines Corp-----<br>Davis Placer Mining Co., B. Moscell-----<br>Empire-Star Mines Co., Ltd-----<br>Republic Gold Mining Corp-----<br>Cooley Butler-----<br>Great Northern Gold Mines-----                             | 745 Rowan Bldg., Los Angeles-----<br>Grantsville-----<br>Box 831, Nevada City-----<br>Washington-----<br>Rm. 1507, 14 Wall St., New York, N. Y.-----<br>P.O. Box 914, Grass Valley-----<br>Rowan Bldg., Los Angeles-----<br>Nevada City----- | Grass Valley<br>Grantsville<br>Nevada City<br>Washington<br>Grass Valley<br>Grass Valley<br>Grass Valley<br>Nevada City |

|                              |   |  |   |                |
|------------------------------|---|--|---|----------------|
| Idaho-Maryland.....          | a | Idaho-Maryland Mines Co.....                         | Russ Bldg., San Francisco.....          | Grass Valley   |
| Lava Cap.....                | a | Lava Cap Gold Mining Corp.....                       | Box 790, Nevada City.....               | Nevada City    |
| Omega.....                   | g | Omega Development Co.....                            | Bank Bldg., San Francisco.....          | Washington     |
| Queen Lil.....               | a | C. I. Rockefeller.....                               | Nevada City.....                        | Nevada City    |
| San Juan.....                | a | Bradley Mining Co.....                               | Crocker Bldg., San Francisco.....       | North San Juan |
| Spanish.....                 | a | Spanish Mining Co.....                               | Crocker Bldg., San Francisco.....       | Washington     |
| You Bet.....                 | g | You Bet Mining Co.....                               | Grass Valley.....                       | You Bet        |
| <i>Placer County</i>         |   |  |   |                |
| Alabama.....                 | a | Alabama Calif. Gold Mines Co.....                    | P.O. Box 155, Auburn.....               | Penryn         |
| American Bar.....            | a | Industrial Eng. & Equipment Corp.....                | Michigan Bluff.....                     | Michigan Bluff |
| Auburn-Chicago.....          | a | Auburn-Chicago Mining Co.....                        | 3443 Wilshire Blvd., Los Angeles.....   | Penryn         |
| Auburn-Echoless.....         | a | W. S. Floyd.....                                     | Auburn.....                             | Auburn         |
| Crocker Ranch.....           | b | E. B. Skeels.....                                    | Auburn.....                             | Auburn         |
| Dairy Farm.....              | a | Dairy Farm Gold Mine Corp.....                       | Box 328, Lincoln.....                   | Lincoln        |
| Gleason.....                 | b | Goodman Mining Co.....                               | Iowa Hill.....                          | Iowa Hill      |
| Hone-ticket.....             | f | Capital Glenn Mining Co.....                         | Foresthill.....                         | Foresthill     |
| Liberty Hill.....            | b | Black Bear Consolidated Mining Co.....               | Michigan Bluff.....                     | Michigan Bluff |
| Oro Bell.....                | a | Liberty Hill Gold Mine, Ltd.....                     | 417 South Hill St., Los Angeles.....    | Dutch Flat     |
| Paragon.....                 | e | Oro Bell Dredging Co.....                            | Sacramento.....                         | Gold Run       |
| Rawhide.....                 | g | Rosenberger & Gillette.....                          | Foresthill.....                         | Foresthill     |
| Victory.....                 | a | Canyon Mining Corp.....                              | 144 Kearney St., San Francisco.....     | Towle          |
|                              | a | J. E. Johnson & H. E. Loufek.....                    | 233 E. Plaza St., Reno, Nev.....        | Iowa Hill      |
| <i>Plumas County</i>         |   |  |   |                |
| Bunker Hill.....             | f | Sierra Nevada Mining Co.....                         | La Porte.....                           | La Porte       |
| Plumas Eureka Placer.....    | b | Costa & Radil.....                                   | 810 Balfour Bldg., San Francisco.....   | Johnsonville   |
| <i>Sacramento County</i>     |   |  |   |                |
| Capital.....                 | e | Capital Dredging Co.....                             | Balfour Bldg., San Francisco.....       | Folsom         |
| McDerby, Russi Ranch.....    | e | Gold Hill Dredging Co.....                           | 311 California St., San Francisco.....  | Folsom         |
| Mississippi Bar.....         | b | Larson Bros.....                                     | 5220 21st Ave., Sacramento.....         | Folsom         |
| Natomas.....                 | e | Natomas Co.....                                      | Forum Bldg., Sacramento.....            | Natomas        |
| <i>San Bernardino County</i> |   |  |   |                |
| Atolia Rand.....             | b | Atolia Rand Placers, Inc.....                        | 215 W. 5th St., Los Angeles.....        | Atolia         |
| Branch.....                  | a | Elmer Branch et al.....                              | Box 13, Barstow.....                    | Oro Grande     |
| Brookland.....               | a | Butler & Roper.....                                  | Mecca.....                              | Mecca          |
| Coyote.....                  | a | Randeburg Silver Mines Corp., F. H. Lanley.....      | 702 Continental Bldg., Los Angeles..... | Red Mountain   |
| Kelly.....                   | a | Kelly Gold & Silver Mines, Inc., Frank W. Roper..... | Hallongsworth Bldg., Los Angeles.....   | Red Mountain   |

a. Lode mine. b. Placer mine. c. Tailing dump. e. Dredge. f. Drift mine. g. Hydraulic mining.

## GOLD—Continued

Principal Gold Producers in California out of a Total of 2,651 Placer Operators and Lode Mines in 1934.

| Mine                                       | Type of mine | Operator   | Address                                | Location of mine |
|--|--------------|--|--|------------------|
| <i>Markesun</i> .....                      | a            | Thomas M. Hall.....                                | P.O. Box 231, Ludlow.....              | Ludlow           |
| <i>Old Peter</i> .....                     | a            | Yim & Wheelock.....                                | Box B, Ludlow.....                     | Ludlow           |
| <i>Vanderbuilt (Sidewinder)</i> .....      | a            | Atascadero Mining Co.....                          | Atascadero.....                        | Ivanpah          |
| <i>Vulcan</i> .....                        | a            | John M. Funk et al.....                            | Amboy.....                             | Amboy            |
|  | a            | C. O. Nordine.....                                 | Trona.....                             | Trona            |
| <i>San Diego County</i>                    |              |  |  |                  |
| <i>North Hubbard</i> .....                 | a            | Campbell & Baclay.....                             | 4595 S. Orange Dr., Los Angeles.....   | Julian           |
| <i>Shasta County</i>                       |              |  |  |                  |
| <i>American</i> .....                      | a            | Abacada Mining Corp.....                           | French Gulch.....                      | French Gulch     |
| <i>Iron Mountain</i> .....                 | a            | The Mountain Copper Co., Ltd.....                  | Balfour Bldg., San Francisco.....      | Matheson         |
| <i>Milkmaid</i> .....                      | a            | J. H. Scott Co.....                                | 465 California St., San Francisco..... | French Gulch     |
| <i>Yankee Jack-Boswell</i> .....           | a            | Richstrike Gold Mines, Ltd.....                    | Redding.....                           | Redding          |
| <i>Sierra County</i>                       |              |  |  |                  |
| <i>Golden Bear</i> .....                   | g            | Golden Bear Mines, Ltd., H. F. Thomas, Sec.....    | 47 Second St., San Francisco.....      | Alleghany        |
| <i>Kanaka Creek</i> .....                  | a            | Lloyd V. Smith.....                                | Alleghany.....                         | Alleghany        |
| <i>Kenton</i> .....                        | a            | George E. Gamble.....                              | 1431 Waverly St., Palo Alto.....       | Alleghany        |
| <i>Oriental</i> .....                      | a            | Gold Star Mines, Inc.....                          | Alleghany.....                         | Alleghany        |
| <i>Oriflame</i> .....                      | a            | John L. Connel.....                                | Alleghany.....                         | Alleghany        |
| <i>Original 16 to 1 and Tightner</i> ..... | a            | Original 16 to 1 Mines, Inc.....                   | Russ Bldg., San Francisco.....         | Alleghany        |
| <i>Ruby</i> .....                          | g            | Carl Vivian, Lessee.....                           | Alleghany.....                         | Alleghany        |
| <i>Scotia</i> .....                        | a            | E. L. Crafts.....                                  | Grass Valley.....                      | Alleghany        |
| <i>Sierra Alaska</i> .....                 | a            | E. K. Askerkraft, Lessee.....                      | Towle.....                             | Pike             |
| <i>Sierra Butte</i> .....                  | a            | Hayes Co., E. A. Hayes.....                        | Mercury Herald Bldg., San Jose.....    | Sierra City      |
| <i>Siskiyou County</i>                     |              |  |  |                  |
| <i>Cal Ore</i> .....                       | e            | Cal Ore Dredging Co.....                           | Monadnock Bldg., San Francisco.....    | Yreka            |
| <i>King Solomon</i> .....                  | a            | King Solomon Mines Co.....                         | Crocker Bldg., San Francisco.....      | Black Bear       |
| <i>Mt. Vernon</i> .....                    | a            | K. K. Ash.....                                     | Yreka.....                             | Yreka            |
| <i>New York</i> .....                      | a            | California-New York Mining Co., Byrne & Wayne..... | Fort Jones.....                        | Fort Jones       |

|                               |   |  |  |               |
|-------------------------------|---|--|--|---------------|
| Old Turk.....                 | a | Banks & Maginnis, Inc.....                           | Fort Jones.....                            | Fort Jones    |
| Oro Grande.....               | a | Oro Grande Mining Co.....                            | Callahan.....                              | Callahan      |
| Reeves.....                   | g | Minnie A. Reeves.....                                | 126 Laguna St., San Francisco.....         | Happy Camp    |
| <i>Stanislaus County</i>      |   |  |  |               |
| La Grange.....                | e | La Grange Gold Dredging Co.....                      | Mills Bldg., San Francisco.....            | La Grange     |
| Stines Property.....          | b | La Grange Gold Mines, Inc., Alfred B. Swinerton..... | 225 Bush St., San Francisco.....           | La Grange     |
| <i>Trinity County</i>         |   |  |  |               |
| Brown Bear.....               | a | Brown Bear Mines Corp.....                           | Lewiston.....                              | Lewiston      |
| Canyon Creek.....             | g | Canyon Creek Placers, Inc.....                       | Dedrick.....                               | Dedrick       |
| Enterprise.....               | a | Chickson Oil Co., Ltd.....                           | Chapman Bldg., Fullerton.....              | Helena        |
| Gold Bar.....                 | e | Gold Bar Dredging Corp.....                          | Box 103, Lewiston.....                     | Lewiston      |
| Osborn Hill.....              | g | M. R. K. Mining Co.....                              | Helena.....                                | Helena        |
| Red Hill.....                 | g | Northern California Mines Co.....                    | 510 Standard Oil Bldg., San Francisco..... | Junction City |
| Senger Placer.....            | g | Senger Placer Co., Moon Lee.....                     | Weaverville.....                           | Weaverville   |
| Trinity.....                  | e | Trinity Dredging Co.....                             | Lewiston.....                              | Lewiston      |
| <i>Tuolumne County</i>        |   |  |  |               |
| Big Dyke.....                 | a | F. B. Kallberg.....                                  | Columbia.....                              | Columbia      |
| Columbus.....                 | a | Columbus Gold Mining Co.....                         | 1 Montgomery St., San Francisco.....       | Tuolumne      |
| Lizard.....                   | d | John L. Witney.....                                  | Jamestown.....                             | Jamestown     |
| Newmeyer.....                 | a | F. E. Bernard.....                                   | Sonora.....                                | Sonora        |
| Senator.....                  | a | Senator Mining Co.....                               | Chinese Camp.....                          | Chinese Camp  |
| Soulsby Belle.....            | a | Soulsby Belle Mining Camp.....                       | Soulsbyville.....                          | Soulsbyville  |
| <i>Yuba County</i>            |   |  |  |               |
| Blue Point.....               | f | Gold Exploration Co.....                             | Smartsville.....                           | Smartsville   |
| Golden Hope (Horse Shoe)..... | a | Wallberg Mining Corp.....                            | Challenge.....                             | Challenge     |
| Stanfield Hill.....           | e | Sierra Gold Dredging Co.....                         | Russ Bldg., San Francisco.....             | Oregon House  |
| Yuba.....                     | e | Yuba Consolidated Gold Fields.....                   | 351 California St., San Francisco.....     | Hannonton     |

a. Lode mine. b. Placer mine. d. Pocket. e. Dredge. f. Drift mine. g. Hydraulic mining.

## GRANITE

| Operator   | Product          | Address  | Location of quarry                            |
|--|------------------|--|---|
| <i>Fresno County</i><br>Academy Granite.<br>Superior Granite Co., Inc.   | a<br>a           | Clovis.<br>Clovis.   | Clovis<br>Academy                             |
| <i>Lassen County</i><br>A. D. Greig, Greig Quarry  | a                | Susanville.  | Susanville                                    |
| <i>Madera County</i><br>Kingsland Granite Co.  | a                | Rowell Bldg., Fresno   | Bates Station                                 |
| <i>Mariposa County</i><br>Yosemite National Park   | a                | Yosemite.  | Yosemite Park                                 |
| <i>Nevada County</i><br>Neta Granite Quarry, Ludwig Netz.  | a                | Nevada City.   | Nevada City                                   |
| <i>Placer County</i><br>Victor Wickman   | a                | Rocklin.   | Rocklin                                       |
| <i>Plumas County</i><br>Paul Sonognini.  | a                | Chilcoot.  | Chilcoot                                      |
| <i>Sacramento County</i><br>Folsom State Prison  | a                | Repressa.  | Repressa                                      |
| <i>San Diego County</i><br>Crystal Black Quarry, John Stridsburg.<br>Matson & Deering, Meyers Quarry.<br>Magee Quarry, Robert J. Magee.<br>McGilvray-Raymond Corp., Lakeside Quarry. | a<br>a<br>a<br>a | Esecondo.<br>Lakeside.<br>Pala.<br>678 S. Anderson St., Los Angeles. | Spooks Canyon<br>Lakeside<br>Pala<br>Lakeside |
| <i>San Luis Obispo County</i><br>California Cut Stone & Granite Co.  | b                | South San Francisco.   | Santa Maria                                   |
| <i>Sonoma County</i><br>L. R. De Chesne.<br>Ernest Laurent.  | c<br>b, c        | Glen Ellen.<br>Kenwood.  | Glen Ellen<br>Kenwood                         |
| <i>Ventura County</i><br>G. W. Dryden.   | c                | Fillmore.  | Grimes Canyon                                 |

a. Granite used in building and monumental stone. b. Tuff used as building stone. c. Volcanic rock used as flagstone.



## GYPSUM

| Operator   | Address  | Location of quarry         |
|--|--|----------------------------|
| <i>Fresno County</i><br>Green & Collins.....<br>Paoli Gypsum Mine, A. P. Shepard, Mgr..... | Ceres.....<br>3101 Mariposa St., Fresno.....                           | South Dos Palos<br>Mendota |
| <i>Imperial County</i><br>Imperial Gypsum Quarry, Pac. Portland Cement.....                | 111 Sutter St., San Francisco.....                                     | Plaster City               |
| <i>Merced County</i><br>Dos Palos Gypsum Co., O. L. Divens and A. A. Conrowe.....          | Dos Palos.....   | Dos Palos                  |
| <i>Riverside County</i><br>E. R. Nonhoff.....<br>U. S. Gypsum Co.....                      | 1116 Ramona St., Corona.....<br>507 Architects Bldg., Los Angeles..... | Corona<br>Midland          |

## IODINE

| Operator  | Address  | Mine                                |
|---|--|-------------------------------------|
| <i>Los Angeles County</i><br>General Salt Co.....<br>Deepwater Chemical Co., Ltd.....<br>I. O. Dow Chemical Co..... | P.O. Box 277, Long Beach.....<br>Box 762, Compton.....<br>310 Santiago Ave., Long Beach..... | Long Beach<br>Compton<br>Long Beach |

## IRON

| Mine   | Operator                       | Address                                    | Location of mine |
|--|--------------------------------|--|------------------|
| <i>San Bernardino County</i><br>Cave Canyon..... | A. S. Vinell Co.....           | 969 Amelia Ave., Los Angeles.....          | Baxter           |
| <i>Santa Cruz County</i><br>Rob Roy Beach.....   | MacDonald & Kahn Co., Ltd..... | Financial Center Bldg., San Francisco..... | Rob Roy          |

## LEAD

*Principal Lead Producers in California in 1934*

| Mine  | Operator   | Address   | Location of mine             |
|---|--|---|------------------------------|
| <i>Inyo County</i><br>Carbonate.....<br>Estelle & Cerro Gordo.....<br>Santa Rosa..... | J. P. Madison.....<br>Estelle Mines Corp.....<br>Santa Rosa Mining & Development Co., Inc..... | 490 Post St., San Francisco.....<br>972 S. 4th St., Los Angeles.....<br>Keeler..... | Shoshone<br>Keeler<br>Keeler |
| <i>Nevada County</i><br>Empire, North Star, Murchie<br>Empress.....                   | Empire-Star Mines Co., Ltd.....<br>Republic Gold Mining Corp.....                              | Rm. 1507, 14 Wall St., New York, N. Y.....<br>Box 914, Grass Valley.....            | Grass Valley<br>Grass Valley |
| <i>San Bernardino County</i><br>H. C. Ryerson.....                                    | H. C. Ryerson.....<br>R. P. Merritt.....<br>C. O. Nordine.....                                 | Dagget.....<br>Orlando.....<br>Trona.....   | Dagget<br>Orlando<br>Trona   |

LIME AND LIMESTONE

| Operator  | Product                        | Address   | Location of quarry  |
|---|--------------------------------|---|---|
| <i>Alameda County</i><br>California Chemical Corp.  | a, d                           | Box 8-A, Newark   | Newark  |
| <i>El Dorado County</i><br>Auburn Chemical Lime Co., Ltd.<br>Diamond Springs Lime Co.<br>El Dorado Limestone Co., J. H. Bell, Mgr.<br>Pac. Portland Cement Co., Cons. | a, b<br>a, b<br>b, c<br>b      | Auburn<br>Diamond Springs<br>Shingle Springs<br>111 Sutter St., San Francisco   | Newcastle<br>Diamond Springs<br>Shingle Springs<br>Auburn |
| <i>Fresno County</i><br>Coral Reef Lime Corp., B. F. Mason, Mgr.<br>Drake Lime Co., H. E. Drake   | c, e<br>c, e                   | Dinuba<br>R.F.D. 2, Box 821, Sanger   | Reedley<br>Sanger   |
| <i>San Bernardino County</i><br>Cal. Portland Cement Co.<br>Chubbuck Lime Co., Chas. I. Chubbuck<br>Victorville Lime Rock Co.   | a<br>a, b, c<br>b              | 1228 Pac. Mutual Bldg., Los Angeles<br>5000 Worth St., Los Angeles<br>2149 Bay St., Los Angeles                             | Colton<br>Chubbuck<br>Victorville                         |
| <i>San Mateo County</i><br>Pacific Portland Cement Co.  | c, d                           | 111 Sutter St., San Francisco   | San Mateo   |
| <i>Santa Clara County</i><br>Bay Shell Co.<br>L. H. Beck<br>Bernal California Marl Co., Pedro Bernal<br>W. B. Ortleby Shell Co.<br>Santa Clara Holding Co., Ltd.      | c, d<br>c, d<br>c, e<br>d<br>a | 503 Market St., San Francisco<br>P.O. Box 113, Colma<br>Edenvale, c/o San Jose<br>Alviso<br>319 Matson Bldg., San Francisco | Alviso<br>Alviso<br>Edenvale<br>Alviso<br>Sintla          |
| <i>Santa Cruz County</i><br>Henry Cowell Lime and Cement Co., W. H. George, Mgr.<br>Holmes Lime & Cement Co.<br>Pacific Limestone Prod. Co.                           | a, b<br>a<br>b                 | 2 Market St., San Francisco<br>Division and De Haro Sts., San Francisco<br>Spring St., Santa Cruz                           | Santa Cruz<br>Felton<br>Santa Cruz                        |
| <i>Tuolumne County</i><br>McLean Quarry, W. S. McLean<br>U. S. Lime Products Corp.  | a<br>a, b                      | 419 Bayshore Blvd., San Francisco<br>58 Sutter St., San Francisco   | McLean Spur<br>Sonora                                     |
| <i>Ventura County</i><br>Tapo Alta Lime & Fertilizer Co., Mrs. M. L. Franklin, Secy.  | c, e                           | 412 W. 6th St., Los Angeles   | Santa Susana  |

a. Producer of burnt lime. b. Producer of limestone. c. Agricultural lime. d. Shells. e. Marl.

MAGNESITE

| Operator   | Address             | Location of mine |
|--|---------------------|------------------|
| <i>Santa Clara County</i><br>Sierra Magnesite Co., lessee, Western Magnesite Mine..... | Box 8A, Newark..... | Red Mountain     |
| <i>Sierrita County</i><br>Sierra Magnesite Co., Bald Eagle Mine.....                   | Box 8A, Newark..... | Gustine          |

MAGNESIUM SALTS

| Operator   | Product                | Address   | Location of plant                   |
|--|------------------------|---|-------------------------------------|
| <i>San Diego County</i><br>California Chemical Corp.....   | Chloride               | Box 8A, Newark.....   | San Diego                           |
| <i>San Mateo County</i><br>Marine Chemical Co., R. E. Clarke<br>Plant Rubber & Asbestos Works..... | Carbonate<br>Carbonate | South San Francisco.....<br>537 Brannan St., San Francisco..... | South San Francisco<br>Redwood City |

## MANGANESE ORE

| Operator   | Address                            | Location of mine |
|--|------------------------------------|------------------|
| <i>Lake County</i><br>Bradley & Ekstrom.....           | 320 Market St., San Francisco..... | Middletown       |
| <i>Riverside County</i><br>Bradley & Ekstrom.....      | 320 Market St., San Francisco..... | Cox              |
| <i>San Bernardino County</i><br>Bradley & Ekstrom..... | 320 Market St., San Francisco..... | Hector           |

## MARBLE (Including Onyx and Travertine)

| Operator   | Product | Address                                  | Location of quarry |
|--|---------|--|--------------------|
| <i>Santa Barbara County</i><br>G. Antolini.....                                | b       | 111 E. Gutierrez St., Santa Barbara..... | Tajiguas           |
| <i>Solano County</i><br>Tolenas Springs Onyx, L. Cardini.....                  | c       | 121 14th St., San Francisco.....         | Tolenas Springs    |
| <i>Tuolumne County</i><br>The Columbia Marble Co., R. H. Van Norden, Secy..... | a       | 413 Rialto Bldg., San Francisco.....     | Columbia           |

a. Marble. b. Limestone flagstone. c. Onyx and travertine.

## MINERAL WATER

| Operator   | Address   | Location of spring  |
|--|---|---|
| <i>Butte County</i><br>Feather River Canyon Spring Water Co., R. E. Chappell<br>Richardson Springs, Lee Richardson, Mgr.   | 2215 L St., Sacramento<br>Chico   | Pulga<br>Chico  |
| <i>Calaveras County</i><br>Mok-Hill Mineral Springs, L. Walkmeister.   | Sutter Creek  | Sutter Creek  |
| <i>Colusa County</i><br>Cooks Springs, Fred C. Lewe, lessee.   | Lodoga  | Cooks Springs   |
| <i>Contra Costa County</i><br>Alhambra Water Co.   | Martinez  | Martinez  |
| <i>Lake County</i><br>Adams Mineral Springs, Clarence Prather<br>Bartlett Spring Co.<br>Norman Mineral Springs, H. C. Norman, Mgr.<br>Witter Springs, Inc., J. A. Carroll, Pres.   | Adams, via Middletown<br>681 Geary St., San Francisco<br>Middletown<br>39th and Canal Sts., Chicago, Ill.   | Adams<br>Bartlett Springs<br>Middletown<br>Witter Springs   |
| <i>Los Angeles County</i><br>Cascade Water Co.<br>Elysian Spring Water Co.<br>Holly Spring Water<br>Magnetic Spring Water Co.<br>Mission Spring Water Co.<br>Mountain Spring Water Co.<br>Pure-lax Mineral Water Co.<br>Sparklett Bottled Water Co.<br>White Rose Spring Water Co. | 4556 York Blvd., Los Angeles<br>1338 Baxter, Los Angeles<br>2298 Holly Dr., Los Angeles<br>936 Palm Ave., Sherman<br>8938 Keith, Hollywood<br>226 S. Avenue 54, Los Angeles<br>3640 Griffin, Los Angeles<br>4800 York Blvd., Los Angeles<br>4835 N. Figueroa St., Los Angeles | Los Angeles<br>Los Angeles<br>Los Angeles<br>Los Angeles<br>Hollywood<br>Los Angeles<br>Los Angeles<br>Los Angeles<br>Los Angeles |
| <i>Marin County</i><br>Purity Spring Water Co.   | 2050 Kearny St., San Francisco  | Sausalito   |
| <i>Napa County</i><br>Calistoga Bottling Works, G. Musante<br>Napa Soda Springs Co., G. H. T. Jackson<br>Samuels Soda Spring, N. Herlitz, Mgr.<br>Walters Spring Mineral Water Co.   | Calistoga<br>7 Front St., San Francisco<br>Monticello<br>St. Helena   | Calistoga<br>Napa<br>Monticello<br>Pope Valley  |

|  |  |   |
|--|--|---|
| <i>Orange County</i><br>La Vida Mineral Water Co.  | 804 Spring Arcade Bldg., Los Angeles   | Carbon Canyon                                     |
| <i>Placer County</i><br>Ki-la-ga Co.   | Lincoln  | Valley  |
| <i>Riverside County</i><br>Beulah Springs, Oscar C. McNicholl  | Arlington  | Arlington   |
| <i>San Bernardino County</i><br>Arrowhead Hot Springs, California Cons. Water Co.  | 1586 E. Washington Blvd., Los Angeles  | Arrowhead   |
| <i>San Diego County</i><br>Rock Springs Co., E. S. Walek   | R. 2, Box 442, Escondido   | Escondido   |
| <i>San Francisco County</i><br>Blue Crest Beverage Co.<br>Diamond Rock Spring Water Co., L. Paolinelli   | 615 Excelsior Ave., San Francisco<br>247 Naples St., San Francisco                   | San Francisco<br>San Francisco                    |
| <i>San Luis Obispo County</i><br>Crystal Spring Water Co., W. R. Hudson<br>Mary Hill Mineral Well Co., Fred Merkel<br>Superior Spring Water, Frank Sweeney | R.F.D. 2, Box 11, San Luis Obispo<br>Paso Robles<br>R.F.D. 2, Box 5, San Luis Obispo | San Luis Obispo<br>Paso Robles<br>San Luis Obispo |
| <i>Santa Barbara County</i><br>Veronica Mineral Springs Co.  | 699 Brannan St., San Francisco   | Santa Barbara                                     |
| <i>Siskiyou County</i><br>The Shasta Water Co.<br>Yreka Coco Cola Bottling Works, Fred J. Meamber, Prop.   | 6th and Brannan Sts., San Francisco<br>Yreka   | Dunsmuir<br>Little Shasta                         |
| <i>Sonoma County</i><br>Agua Caliente Springs Co., T. H. Corcoran, Prop.<br>Barcal Springs, John Kolling<br>Fetters Mineral Springs, George Fetters        | Agua Caliente<br>Preston<br>Fetters Springs  | Agua Caliente<br>Preston<br>Fetters Springs       |

**PLATINUM**  
*Principal Platinum Producers in California in 1934*

| Operator  | Address   | Location of mine     |
|---|---|----------------------|
| <i>Merced County</i><br>Snelling Dredging Co.....<br>Yuba Consolidated Gold Fields..... | Snelling.....<br>351 California St., San Francisco.....           | Snelling<br>Snelling |
| <i>Sacramento County</i><br>Capital Dredging Co.....<br>Natomas Co.....                 | Balfour Bldg., San Francisco.....<br>Forum Bldg., Sacramento..... | Folsom<br>Natomas    |
| <i>Shasta County</i><br>Gas Point Dredge, Staheli & Cerney.....                         | Box 127, Anderson.....  | Gas Point            |
| <i>Stanislaus County</i><br>La Grange Gold Dredging Co.....                             | Mills Bldg., San Francisco.....                                   | La Grange            |
| <i>Yuba County</i><br>Yuba Consolidated Gold Fields.....                                | 351 California St., San Francisco.....                            | Hammonton            |

**POTASH**

| Operator   | Address    | Location of plant |
|--|------------|-------------------|
| <i>San Bernardino County</i><br>American Potash and Chemical Co..... | Trona..... | Trona             |



## PUMICE OR VOLCANIC ASH

| Operator  | Product | Address                           | Location of quarry |
|---|---------|-----------------------------------|--------------------|
| <i>Imperial County—</i><br>The Kalite Co., Ltd., O. J. Salisbury, Pres. | a       | 90 Oak Knoll Ave., Pasadena       | Calipatria         |
| <i>Inyo County</i><br>Chas. Brown.                                      | a       | Shoshone                          | Shoshone           |
| Tonopah & Tidewater Ry.   | b       | 1014 Central Bldg., Los Angeles   | Shoshone           |
| Victorville Lime Rock Co.   | a       | 2149 Bay St., Los Angeles         | Coso Junction      |
| <i>Kern County</i><br>Cudahy Packing Co.                                | b       | 803 Macy St., Los Angeles         | Ceneda             |
| <i>Madera County</i><br>Bennett & Jourden, L. T. Bennett                | b       | P. O. Box 583, Selma              | Friant             |
| <i>Mono County</i><br>California Quarries Corp.                         | a       | 1300 Quinby Bldg., Los Angeles    | Laws               |
| <i>Napa County</i><br>Pearl Pumice Quarries, Jas. H. Pearl              | a       | 565 Monticello Rd., Napa          | Monticello         |
| <i>San Luis Obispo County</i><br>Gray Eagle Mine, M. L. Francis         | b       | Creston                           | Creston            |
| <i>Siskiyou County</i><br>G. Z. Johnson                                 | a, c    | 255 California St., San Francisco | Pumice Mountain    |

a. Pumice. b. Volcanic ash. c. Scoria.

## PYRITE

| Operator   | Address                            | Location of mine |
|--|------------------------------------|------------------|
| <i>Alameda County</i><br>Leona Chemical Co., D. A. McDonnell.....  | Syndicate Bldg., Oakland.....      | Leona Heights    |
| <i>Shasta County</i><br>Mountain Copper Co., Wm. F. Kett, Mgr..... | 112 Market St., San Francisco..... | Matheson         |

## QUICKSILVER

Principal Quicksilver Producers in California for 1934 out of a Total of 64 Operating Properties

| Mine                                     | Operator  | Address                           | Location of mine |
|--|---|-----------------------------------|------------------|
| <i>Colusa County</i><br>Manzanita.....   | S. W. Taylor & T. A. Dungan.....                | Wilbur Springs.....               | Wilbur Springs   |
| <i>Kings County</i><br>Frediana.....     | Frediana Mining Co., E. K. Anderson, Mgr.....   | Parkfield.....                    | Parkfield        |
| <i>Lake County</i><br>Great Western..... | Bumsted Mining Co., E. J. Bumsted, Mgr.....     | Middletown.....                   | Middletown       |
| Helen.....                               | L. S. Peterson.....                             | Middletown.....                   | Middletown       |
| Mirabel.....                             | Mirabel Quicksilver Co., J. W. Doman, Supt..... | Middletown.....                   | Middletown       |
| Red Elephant.....                        | Big Six Mining Co., C. P. Morey.....            | Box 211, Calistoga.....           | Reiff            |
| Sulphur Bank.....                        | Sulphur Bank Syndicate, W. Bradley, Mgr.....    | Crocker Bldg., San Francisco..... | Lower Lake       |
| <i>Napa County</i><br>Aetna.....         | E. W. Erickson.....                             | Middletown.....                   | Aetna Springs    |
| Ivanhoe.....                             | Harry Patten.....                               | Calistoga.....                    | Mt. St. Helena   |
| Knoxville.....                           | Geo. E. Gamble.....                             | 1431 Waverly St., Palo Alto.....  | Monticello       |
| Oat Hill & La Joya.....                  | R. A. Hanon & Co.....                           | Middletown.....                   | Aetna Springs    |
| Oat Hill Extension.....                  | Anderson & Russell.....                         | Box 162, Middletown.....          | Aetna Springs    |
| Switzer Property.....                    | Frank Adams.....                                | Pope Valley.....                  | Pope Valley      |

|                                   |  |   |                |
|-----------------------------------|--|---|----------------|
| <i>San Benito County</i>          | Harry A. Leonard Co.....                                     | Hollister.....                              | Hernandez      |
| Alpine.....                       | Peter Bual.....  | Paicines.....                               | Idria          |
| Aurora.....                       | Webster & Zessan.....  | Hernandez.....                              | Hernandez      |
| Clear Creek.....                  | New Idria Quicksilver Mines, Inc.....                        | Mer. Exchange Bldg., San Francisco.....     | Idria          |
| Idria.....                        |  |   |                |
| <i>San Luis Obispo County</i>     |  |   |                |
| Bonanza.....                      | E. M. Merryfield.....  | Adelaida.....                               | Adelaida       |
| Carson.....                       | Ellard W. Carson.....  | San Luis Obispo.....                        | Adelaida       |
| Klau*.....                        | Klau Mine, Inc.....  | Pent House, Mills Bldg., San Francisco..... | Adelaida       |
| Oceanic.....                      | Anglo American Mining Corp.....                              | Mills Bldg., San Francisco.....             | Cambria        |
| <i>Santa Clara County</i>         |  |   |                |
| Guadalupe.....                    | Albert E. Golden.....  | 237 Wayne Ave., Oakland.....                | Los Gatos      |
| New Almaden (dump) (Senator)..... | F. P. Hauck & E. Hernandez.....                              | San Jose.....                               | Almaden        |
| <i>Sonoma County</i>              |  |   |                |
| Cloverdale.....                   | Cavagnaro & Schor.....                                       | Cloverdale.....                             | Cloverdale     |
| Esperanza.....                    | Jas. G. Cortelyou.....                                       | Cloverdale.....                             | Cloverdale     |
| Skaggs Springs.....               | Leo Curtis.....  | Skaggs Springs.....                         | Skaggs Springs |
| Summerset.....                    | C. L. Bower & Sons.....                                      | Cloverdale.....                             | Cloverdale     |
| <i>Trinity County</i>             |  |   |                |
| Altoona.....                      | Altoona Quicksilver Mining Co., J. Frowenfield,<br>Pres..... | 2446 Washington St., San Francisco.....     | Castella       |

\*Klau Mine, Inc. Took over the operation of Klau or Carson Mine in Dec., 1934.

## SALT

| Operator  | Address   | Location of plant               |
|---|---|---------------------------------|
| <i>Alameda County</i><br>Arden Salt Co.....<br>California et al. Plants, Leslie-California Salt Co..... | 225 Bush St., San Francisco.....<br>110 Sansome St., San Francisco.....     | Newark and Mt. Eden<br>Alvarado |
| <i>Imperial County</i><br>Mullet Island Development Co.....   | Calipatria.....   | Calipatria                      |
| <i>Kern County</i><br>Long Beach Salt Co.....   | P.O. Box 28, Long Beach.....  | Saltale                         |
| <i>Los Angeles County</i><br>Long Beach Salt Co.....  | P.O. Box 28, Long Beach.....  | Long Beach                      |
| <i>Modoc County</i><br>Surprise Valley Salt Works, Joshua H. Hutchinson.....                            | Cedarville.....   | Lake City                       |
| <i>Mono County</i><br>Venita McPherson.....   | Mono Lake.....  | Mono Lake                       |
| <i>Monterey County</i><br>Monterey Bay Salt Co., E. C. Viera, Mgr.....                                  | Moss Landing.....   | Moss Landing                    |
| <i>San Bernardino County</i><br>California Rock-Salt Co.....<br>Rock Salt Products Co.....              | 2465 Hunter St., Los Angeles.....<br>845 El Centro St., South Pasadena..... | Amboy<br>Salt Marsh             |
| <i>San Diego County</i><br>Western Salt Co.....   | 917 J. D. Spreckels Bldg., San Diego.....                                   | San Diego                       |
| <i>San Mateo County</i><br>Stauffer Chemical Co.....  | 636 California St., San Francisco.....                                      | Redwood City                    |

SANDSTONE

| Operator                               | Address                                     | Location of quarry |
|--|---|--------------------|
| <i>Los Angeles County</i>              |   |                    |
| Alphonzo Bell Corp.....                | 10601 Chalon Rd., Bel-Air, Los Angeles..... | Bel-Air            |
| Binder Bros., W. H. Binder.....        | 285 N. Lake Ave., Pasadena.....             | Boquet Canyon      |
| Blue Goose Quarry, Robert Cox.....     | 1975 Lundy Ave., Pasadena.....              | Chatsworth         |
| R. L. Glover.....                      | 917 W. 6th St., Los Angeles.....            |                    |
| <i>Monterey County</i>                 |   |                    |
| Sierra Quarry, Harry Rogers.....       | Box 136, Carmel.....                        | Carmel             |
| Andrew Stewart.....                    | Carmel Valley.....                          | Carmel Valley      |
| <i>Napa County</i>                     |   |                    |
| H. F. Galbreath.....                   | 1742 Solano St., Berkeley.....              |                    |
| <i>San Luis Obispo County</i>          |   |                    |
| Mora Bros.....                         | Box 121, Cambria.....                       | Cambria            |
| Renolds Quarry, Thomas C. Renolds..... | R.F.D. A, Paso Robles.....                  | Paso Robles        |

## SILICA

| Operator   | Product | Address                         | Location of mine |
|--|---------|---------------------------------|------------------|
| <i>Contra Costa County</i><br>Hazel-Atlas Glass Co. of California, Ltd.      | b       | 89th Ave. and G St., Oakland    | Summerville      |
| Silica Co. of California, Ltd.   | b       | Brentwood                       | Brentwood        |
| <i>El Dorado County</i><br>Snow Silica Deposit, Spiecky Polish Corp., Owners | a       | 1401 3d St., San Francisco      | Placerville      |
| <i>Monterey County</i><br>Del Monte Products, A. J. Gunnell                  | b       | Crocker Bldg., San Francisco    | Del Monte        |
| <i>Riverside County</i><br>P. J. Weisel, Inc.                                | a       | La Habra                        | Corona           |
| <i>San Bernardino County</i><br>Temescal Clay Co.                            | c       | 5601 S. Boyle Ave., Los Angeles | Hicks            |
| <i>San Diego County</i><br>Standard Sanitary Mfg. Co., R. P. Jones, Mgr.     | a       | Campo                           | Campo            |

a. Quartz. b. Glass sand. c. Quartzite.

## SILIMANITE—ANDALUSITE—CYANITE GROUP

| Operator  | Product    | Address   | Location of mine |
|---|------------|---|------------------|
| <i>Imperial County</i><br>Virefrax Corp.                        | Cyanite    | 5050 Pacific St., Vernon, Los Angeles             | Ogilby           |
| <i>Mono County</i><br>Champion Spark Plug Co., Ceramic Division | Andalusite | Butler Ave. and Grand Trunk R. R., Detroit, Mich. | Mocalno          |

SILVER  
Principal Silver Producers in California in 1934

| Mine  | Type of mine | Operator   | Address                           | Location of mine |
|---|--------------|--|-----------------------------------|------------------|
| <i>Alpine County</i><br>Colorado Hill           | d            | Colorado Hill Mining Co., c/o N. H. Bennett      | Russ Bldg., San Francisco         | Markleeville     |
| <i>Amador County</i><br>Argonaut Central Eureka | a            | Argonaut Mining Co., Ltd.                        | Jackson                           | Jackson          |
| Tailing Dump                                    | a            | Central Tailing Co.                              | 564 Market St., San Francisco     | Sutter Creek     |
| Kennedy   | a            | Kennedy Mining & Milling Co.                     | 519 California St., San Francisco | Martell          |
| <i>Butte County</i><br>Surcease                 | a            | Hoefling Bros., Inc.                             | R. F. D. 4, Box 214, Chico        | Yankee Hill      |
| <i>Calaveras County</i><br>Boston               | a            | Boston, Mokelumne Mining Co., F. C. Moore, Supt. | Mokelumne Hill                    | Mokelumne Hill   |
| Carson Hill                                     | a            | Carson Hill Gold Mine Corp.                      | Sonora                            | Melons           |
| <i>El Dorado County</i><br>Montezuma            | a            | Montezuma-Apex Mining Co.                        | Box M, Placerville                | El Dorado        |
| <i>Inyo County</i><br>Carbonate                 | c            | J. P. Madison                                    | 490 Post St., San Francisco       | Shoshone         |
| Estelle & Cerro Gordo                           | c            | Estelle Mines Corp.                              | 972 S. Fourth Ave., Los Angeles   | Keeler           |
| Fairy Queen                                     | b            | Charles Walker                                   | Beatty, Nevada                    | Chloride Cliff   |
| Ninety-Eight                                    | d            | J. B. Chase                                      | Darwin                            | Darwin           |
| Santa Rosa                                      | c            | Santa Rosa Min. and Devel. Co.                   | Keeler                            | Keeler           |
| <i>Kern County</i><br>Elephant-Eagle            | a            | Elephant Eagle Mines Co.                         | Mojave                            | Mojave           |
| Farrbright                                      | a            | Bright and Burton                                | Rosamond                          | Rosamond         |
| Silver Queen                                    | d            | Golden Queen Mining Co.                          | Pacific Mutual Bldg., Los Angeles | Mojave           |
| Soledad   | a            | W. Campbell et al.                               | Mojave                            | Mojave           |
| Standard  | a            | C. A. Heyn & O. J. Bruce                         | Mojave                            | Mojave           |
| Susanna   | a            | Rogers & Gentry                                  | Fairmont                          | Fairmont         |
| Tropic  | a            | Burton Bros., Inc., Lessees, Tropic Mine         | Rosamond                          | Rosamond         |

a. Gold. b. Silver. c. Silver-Lead. d. Gold and silver.

SILVER—Continued  
Principal Silver Producers in California in 1934

| Mine  | Type of mine | Operator   | Address                                      | Location of mine   |
|---|--------------|--|--|--------------------|
| <i>Mono County</i><br>Silverado.....                                | b            | Sierra Cons. Mines Co.....                           | First National Bank Bldg., Reno, Nevada..... | Wellington, Nevada |
| <i>Nevada County</i><br>Empire, North Star, Murchie<br>Empress..... | a            | Empire-Star Mines Co., Ltd.....                      | Rm. 1507, 14 Wall St., New York, N. Y.....   | Grass Valley       |
| Idaho-Maryland.....   | a            | Republic Gold Mining Corp.....                       | P.O. Box 914, Grass Valley.....              | Grass Valley       |
| Lava Cap.....   | a            | Idaho-Maryland Mines Co.....                         | Russ Bldg., San Francisco.....               | Grass Valley       |
| San Juan.....   | a            | Lava Cap Gold Mining Corp.....                       | Box 780, Nevada City.....                    | Nevada City        |
| Spanish.....  | a            | Bradley Mining Co.....                               | Crocker Bldg., San Francisco.....            | North San Juan     |
|   | a            | Spanish Mining Co.....                               | Crocker Bldg., San Francisco.....            | Washington         |
| <i>Placer County</i><br>Auburn-Chicago.....                         | a            | Auburn-Chicago Mining Co.....                        | 3443 Wilshire Blvd., Los Angeles.....        | Penryn             |
| Dairy Farm.....   | a            | Dairy Farm Gold Mine Corp.....                       | Box 326, Lincoln.....                        | Lincoln            |
| <i>Sacramento County</i><br>Natomas.....                            | e            | Natomas Co.....                                      | Forum Bldg., Sacramento.....                 | Natomas            |
| <i>San Bernardino</i><br>Coyote.....                                | d            | Randsburg Silver Mines Corp., F. H. Lanley.....      | 702 Continental Bldg., Los Angeles.....      | Red Mountain       |
| Kelly.....  | b            | Kelly Gold & Silver Mines, Inc., Frank W. Roper..... | Hallsworth Bldg., Los Angeles.....           | Red Mountain       |
| Vanderbuilt (Sidewinder).....                                       | a            | Atascadero Mining Co.....                            | Atascadero.....                              | Ivanpah            |
|   | c            | C. O. Nordine.....                                   | Trona.....                                   | Trona              |
|   | b            | P. A. Rose.....                                      | Milligan via Blythe.....                     | Milligan           |
|   | c            | R. P. Merritt.....                                   | Orlando.....                                 | Orlando            |
| <i>Shasta County</i><br>Iron Mountain.....                          | a            | The Mountain Copper Co., Ltd.....                    | Balfour Bldg., San Francisco.....            | Matheson           |
| <i>Sierra County</i><br>Original 16 to 1 & Tightner.....            | a            | Original 16 to 1 Mines, Inc.....                     | Russ Bldg., San Francisco.....               | Alleghany          |
| <i>Yuba County</i><br>Yuba.....                                     | e            | Yuba Consolidated Gold Fields.....                   | 351 California St., San Francisco.....       | Hammonton          |

a. Gold. b. Silver. c. Silver-Lead. d. Gold and Silver. e. Gold dredge.



SLATE

| Operator  | Product | Address                                | Location of quarry |
|---|---------|--|--------------------|
| <i>El Dorado County</i><br>Pacific Minerals Co., Ltd.....         | -----   | 337 10th St., Richmond.....            | Chili Bar          |
| <i>Inyo County</i><br>Red Slate Quarry, J. D. Leary.....          | -----   | Keeler.....                            | Keeler             |
| <i>Tuolumne County</i><br>Whitney Slate Quarry, W. S. McLean..... | -----   | 419 Bayshore Blvd., San Francisco..... | Hetch Hetchy       |

SOAPSTONE AND TALC

| Operator   | Product | Address                                  | Location of mine |
|--|---------|--|------------------|
| <i>Butte County</i><br>McLean Talc Deposit, W. S. McLean.....                | a       | 419 Bayshore Blvd., San Francisco.....   | McLean Spur      |
| <i>El Dorado County</i><br>Pacific Minerals Co., Ltd., Chas. S. Renwick..... | a       | 337 10th St., Richmond.....              | Shrub            |
| <i>Inyo County</i><br>Mount Whitney Talc Co., Paul Judson, Secretary.....    | b       | Foss Bldg., Pasadena.....                | Darwin           |
| Sierra Talc Co., Franklin Booth, Mgr.....                                    | b       | 428 Union League Bldg., Los Angeles..... | Keeler           |
| <i>San Bernardino County</i><br>Pacific Coast Talc Co.....                   | b       | 2149 Bay St., Los Angeles.....           | Silver Lake      |
| Western Talc Co.....   | b       | 1901 E. Slauson Ave., Los Angeles.....   | Acme             |

r. Soapstone. b. Talc.

SODA

| Operator  | Product      | Address   | Location of plant  |
|---|--------------|---|--------------------|
| <i>Inyo County</i><br>Natural Soda Products Co.....<br>Pacific Alkali Co.....                   | a, b, d<br>a | 650 Spring St., Los Angeles<br>1206 Pacific Mutual Bldg., Los Angeles | Keeler<br>Bartlett |
| <i>San Bernardino County</i><br>American Potash & Chemical Co.....<br>West End Chemical Co..... | a, c<br>a    | Trona.....<br>706 Syndicate Bldg., Oakland                            | Trona<br>West End  |

a. Soda Ash. b. Sodium Bicarbonate. c. Salt Cake. d. Trona.

STONE, MISCELLANEOUS

Under the heading of 'miscellaneous stone' there are four divisions—crushed rock, grinding mill pebbles, paving blocks, and sand and gravel. Crushed rock includes crushed rock that is used in macadam, ballast and for concrete; also rock used for rubble and riprap.

NOTE.—The California State Highway Commission and U. S. Bureau of Public Roads produces both crushed rock and sand and gravel in various places in the State used in construction and maintenance of highways, but not specified in this listing.

| Operator                                  | Product | Address                                     | Location of pit or quarry |
|---|---------|---|---------------------------|
| <i>Alameda County</i>                     |         |   |                           |
| California Rock & Gravel Co.              | a       | 500 Call Bldg., San Francisco               | Livermore                 |
| Hanifen Trucking Co.                      | a       | Pleasanton                                  | Pleasanton                |
| Heafey-Moore Co., Leona Quarry            | b       | 344 High St., Oakland                       | Oakland                   |
| Irrington Gravel Co., O. N. Hirsch        | b       | Irrington                                   | Irrington                 |
| Kaiser Paving Co.                         | a       | 1522 Latham Square Bldg., Oakland           | Eliot                     |
| Kemp Bros.                                | b       | R.F.D. 1 Box 197, Strohbridge Ave., Hayward | Hayward                   |
| Langdon Molding Sand, J. H. Langdon       | c       | R.F.D., Box 89, Niles                       | Decoto                    |
| Red Shale Quarry, W. S. McLean            | d       | 419 Bayshore Blvd., San Francisco           | Arroyo Mocho              |
| Pacific Coast Aggregates, Inc.            | a, b    | 85 2d St., San Francisco                    | Eliot and Niles           |
| Alfred W. Petersen                        | a       | P.O. Box 943, Livermore                     | Livermore                 |
| Ramos Quarry, Ramos Bros.                 | a       | C and 7th Sts., Hayward                     | Hayward                   |
| San Leandro Rock Co., Lake Chabot Quarry  | b       | 2485 Washington St., San Leandro            | Lake Chabot               |
| <i>Amador County</i>                      |         |   |                           |
| Amador County                             | a, b    | Jackson                                     |                           |
| <i>Butte County</i>                       |         |   |                           |
| Butte County                              | a, d    | Oroville                                    | Oroville                  |
| Bechtel-Kaiser Co., R. J. Kennedy, Mgr.   | a, b    | Oroville                                    | Oroville                  |
| Cherokee Sand and Gravel Co., E. E. Myers | a       | R.F.D. 4, Box 127, Chico                    | Cherokee Flat             |
| J. E. Johnson Rock Co.                    | b       | Weber Ave. and E St., Stockton              | Chico                     |
| Lord & Bishop                             | a, b    | Box 547, Oroville                           | Oroville                  |
| Pacific Coast Aggregates, Inc.            | a, b    | 85 2d St., San Francisco                    | Oroville                  |
| <i>Calaveras County</i>                   |         |   |                           |
| Calaveras County                          | a       | San Andreas                                 | Angels                    |
| Pacific Minerals Co., Ltd.                | d       | 337 10th St., Richmond                      | Pardee Dam                |
| Fardee Dam, East Bay Mun. Utility Dist.   | b       | 1924 Broadway, Oakland                      |                           |

a. Sand and gravel. b. Crushed rock (macadam, ballast, rubble, riprap, etc.). c. Molding sand. d. Granules for roofing, terrazzo. e. Slag. f. Tube-mill pebbles. g. Decomposed granite.

## STONE, MISCELLANEOUS—Continued

Under the heading of 'miscellaneous stone' there are four divisions—crushed rock, grinding mill pebbles, paving blocks, and sand and gravel. Crushed rock includes all crushed rock that is used in macadam, ballast and for concrete; also rock used for rubble and riprap.

| Operator   | Product | Address                          | Location of pit or quarry |
|--|---------|----------------------------------|---------------------------|
| <i>Contra Costa County</i>                             |         |                                  |                           |
| Contra Asphalt Sand Co.                                | a       | Martinez                         | Antioch                   |
| Antioch Asphalt Sand Co.                               | a       | 2008 Mission St., San Francisco  | Point Richmond            |
| Blake Bros. Co., Anson S. Blake                        | b       | 204 Balboa Bldg., San Francisco  | Antioch                   |
| California Rock & Gravel Co.                           | a       | 500 Call Bldg., San Francisco    | Antioch                   |
| Coburn Sand Plant, C. W. Coburn                        | a       | 1931 Santiago St., San Francisco | Steg                      |
| Hutchison Co., Stege Quarry                            | b       | 1450 Harrison St., Oakland       | Brentwood                 |
| Silico Co. of Calif., Ltd.                             | c       | Brentwood                        | Antioch                   |
| L. Stamm   | a       | Antioch                          |                           |
| <i>El Dorado County</i>                                |         |                                  |                           |
| El Dorado County                                       | b       | Placerville                      | Georgetown                |
| <i>Fresno County</i>                                   |         |                                  |                           |
| Grant-Service Rock Co., Cons.                          | a, b    | T. W. Patterson Bldg., Fresno    | El Prado                  |
| Pacific Coast Aggregates, Inc.                         | b       | 85 2d St., San Francisco         | Piedra                    |
| <i>Glenn County</i>                                    |         |                                  |                           |
| Southern Pacific Co.                                   | a       | 65 Market St., San Francisco     | Wyo                       |
| Stony Creek Gravel Co., E. B. Bishop                   | a       | Box 325, Orland                  | Wyo                       |
| <i>Humboldt County</i>                                 |         |                                  |                           |
| Benbow Co., Bondholders Protective Committee           | a       | Benbow                           | Benbow                    |
| D. A. Boyd   | a       | R.F.D., Arcata                   | Arcata                    |
| Hemstreet & Bell                                       | a, b    | 501 11th St., Marysville         | Essex                     |
| Mercer-Fraser Co.                                      | a       | 2d and Commercial Sts., Eureka   | South Fork                |
| Northwestern Pacific R.R. Co., Wm. N. Neff, Gen. Supt. | a       | Sausalito                        |                           |
| <i>Imperial County</i>                                 |         |                                  |                           |
| Potholes Granite Quarry, U. S. Bureau of Reclamation   | b       | Winterhaven, c/o Yuma, Ariz.     | Winterhaven               |
| <i>Inyo County</i>                                     |         |                                  |                           |
| Inyo Marble Co.  | b, d    | 726-732 E. 29th St., Los Angeles | Lone Pine                 |

|  |                                       |         |  |  |   |
|--|---------------------------------------|---------|--|--|---|
| <i>Kern County</i>                                   |                                       |         |  |  |   |
| Bakersfield Rock and Gravel Co.                      | Box 395, Station A, Bakersfield.      | a, b    |  |  | Kern River  |
| Kern Rock Co., Ltd.                                  | P.O. Box 1697, Bakersfield.           | a, b    |  |  | Bakersfield   |
| Klassen Sand Pit, P. P. Klassen.                     | 1010 31st St., Bakersfield.           | a       |  |  |   |
| <i>Lake County</i>                                   |                                       |         |  |  |   |
| Charles Kuppinge                                     | Lakeport.                             | a       |  |  | Lakeport  |
| <i>Lassen County</i>                                 |                                       |         |  |  |   |
| Lassen County  | Susanville                            | a       |  |  | Susanville  |
| Red River Lumber Co.                                 | Westwood                              | b       |  |  | Westwood  |
| Basalt Rock Company                                  | Petaluma.                             | b       |  |  | Susanville  |
| <i>Los Angeles County</i>                            |                                       |         |  |  |   |
| Arrow Rock Co.                                       | P.O. Box 155, Monrovia.               | a       |  |  | Monrovia  |
| A. T. & S. F. R.R., I. L. Hibbard, Gen. Mgr.         | 609 Kerckhoff Bldg., Los Angeles      | a       |  |  | Forbes  |
| Azusa Rock & Sand Co.                                | R.F.D. Azusa                          | a, b    |  |  | Azusa   |
| Richard R. Ball.                                     | Box 233, Watteria                     | a       |  |  | Walteria  |
| Bengal & Sons  | 1709 Monte Vista, Pasadena.           | a       |  |  | Pasadena  |
| Blue Diamond Corp., Ltd.                             | 1650 S. Alameda St., Los Angeles      | a       |  |  | El Monte and Roscoe                                   |
| Wm. J. Bonfield                                      | 2008 Laurel Canyon Rd., Los Angeles   | g       |  |  | Hollywood   |
| L. Chandler  | Lomita                                | b       |  |  | Lomita  |
| Consolidated Rock Products Co.                       | 2730 S. Alameda St., Los Angeles      | a, b    |  |  | Whittier and Fullerton                                |
| Ducey & Atwood Rock Co., R. K. Atwood, Pres.         | Box 194, East Pasadena                | a, b    |  |  | East Pasadena   |
| Eaton Canyon Rock and Sand Co.                       | 2350 E. Colorado St., Pasadena        | a, b    |  |  | Pasadena  |
| Graham Bros., Inc.                                   | Long Beach                            | a, b, g |  |  | Catalina Island and Roscoe, El Monte and Rancho Qua's |
| <i>Lindauer Corp.</i>                                |                                       |         |  |  |   |
| Los Angeles Harbor Dept., Bureau of Maintenance.     | Box 208, La Habra                     | a       |  |  | La Habra  |
| Los Angeles Dept. of Water and Power                 | City Hall, San Pedro.                 | b       |  |  | Santa Catalina  |
| Los Angeles & Salt Lake R.R.                         | 207 S. Broadway, Los Angeles          | b       |  |  |   |
| Los Angeles Decomposed Granite Co.                   | Pacific Electric Bldg., Los Angeles   | a       |  |  |   |
| Pacific Rock & Gravel Co.                            | 2171 W. Washington, Los Angeles       | g       |  |  |   |
| Reynolds Crushed Gravel                              | 458 S. Spring St., Los Angeles        | a, b    |  |  | Los Angeles   |
| San Antone Rock Co.                                  | 920 N. Humphreys Ave., Los Angeles    | b, g    |  |  | Los Angeles   |
| Santa Catalina Island Co.                            | Claremont                             | a       |  |  | Los Angeles   |
| Security Material Co.                                | Avalon                                | a, b, g |  |  | Claremont   |
| Edwin Sidebotham & Son, Inc., Sidebotham Sand Plant. | 916 N. Formosa St., Los Angeles       | a       |  |  | Santa Catalina Island                                 |
| Southern Pacific Co.                                 | McFarland and L. Sis., Wilmington     | a       |  |  | Los Angeles   |
| State Decomposed Granite Co.                         | 65 Market St., San Francisco          | a       |  |  | Lomita  |
| Venable Bros.  | 2272 Laurel Canyon Blvd., Los Angeles | g       |  |  | Wahoo   |
|  | 8831 Prince Ave., Los Angeles         | a       |  |  | Hollywood   |
|  |                                       |         |  |  | Los Angeles   |

a. Sand and gravel. b. Crushed rock (macadam, ballast, rubble, riprap, etc.). c. Molding sand. d. Granules for roofing, terrazzo. g. Decomposed granite.

## STONE, MISCELLANEOUS—Continued

Under the heading of 'miscellaneous stone' there are four divisions—crushed rock, grinding mill pebbles, paving blocks, and sand and gravel. Crushed rock includes all crushed rock that is used in macadam, ballast and for concrete; also rock used for rubble and riprap.

| Operator  | Product | Address                               | Location of pit or quarry |
|---|---------|---------------------------------------|---------------------------|
| <i>Madera County</i><br>Southern Pacific Co.-----                       | b       | 65 Market St., San Francisco-----     | Knowles                   |
| <i>Marin County</i><br>Marin County-----                                | a       | San Rafael-----                       | San Rafael                |
| Daniels Con. Co.-----   | b       | 503 Market St., San Francisco-----    | San Quentin               |
| Hutchison Company-----  | b       | 1450 Harrison St., Oakland-----       |                           |
| <i>Mariposa County</i><br>Kalm Jasper Quarry, Pioneer Paper Co.-----    | d       | 5500 S. Alameda St., Los Angeles----- | Bagby                     |
| Yosemite National Park-----   | a, b    | Yosemite-----                         | Yosemite Natl. Park       |
| <i>Mendocino County</i><br>Ukiah Gravel & Cement Co., John Freitas----- | a       | Ukiah-----                            | Ukiah                     |
| <i>Merced County</i><br>Merced County-----                              | a       | Merced-----                           | Los Banos                 |
| Fred Bagsdale-----  | a, b    | Merced-----                           | Merced                    |
| J. W. Huffman, Bair Creek Gravel Pit-----                               | a       | Merced-----                           | Merced                    |
| <i>Modoc County</i><br>The Renshaw Sand, Rock & Gravel Co.-----         | a       | Alturas-----                          | Alturas                   |
| <i>Monterey County</i><br>Del Monte Properties, A. J. Gunnell-----      | a, c    | 401 Crocker Bldg., San Francisco----- | Pacific Grove             |
| Lime Kiln Creek Quarry, B. B. Gates-----                                | b       | Cambria-----                          | Lime Kiln Creek           |
| M. J. Murphy-----   | b       | Monte Verde and 9th Sts., Carmel----- | Carmel                    |
| Pacific Coast Aggregates, Inc.-----                                     | a       | 85 2d St., San Francisco-----         | Lapis and Prattco         |
| S. Ruthven, Seaside Sand Pit-----                                       | a       | Seaside-----                          | Seaside                   |
| Southern Pacific Co.-----   | a       | 65 Market St., San Francisco-----     | Lapis                     |
| <i>Napa County</i><br>Napa County-----                                  | b       | Napa-----                             | Napa                      |
| Basalt Rock Co.-----  | b       | 8th St., Napa-----                    | Napa                      |
| Errington Quarry, Ray Errington-----                                    | a       | Napa-----                             | Napa                      |
| Harold Smith-----   | a       | St. Helena-----                       | St. Helena                |
| Thorsen Gravel Pit, Harry Thorsen-----                                  | a       | St. Helena-----                       | St. Helena                |

|  |      |                                     |                        |
|--|------|-------------------------------------|------------------------|
| <i>Nevada County</i>                         |      |                                     |                        |
| <i>Nevada County</i>                         | b    | Nevada City                         |                        |
| <i>Orange County</i>                         |      |                                     |                        |
| Orange County                                | g    | Santa Ana                           | Whittier and Fullerton |
| Consolidated Rock Products Co.               | a, b | 656 S. Los Angeles St., Los Angeles | El Modena              |
| Graham Bros.                                 | a, b | Long Beach                          | Garden Grove           |
| A. J. Jorgensen                              | a    | Garden Grove                        | Santa Ana              |
| National Cement Pipe Co.                     | a    | Drawer K, Santa Ana                 | Anaheim                |
| B. A. Stoffel                                | a    | Anaheim                             | Orange                 |
| Ralph Welch                                  | a    | 2609 W. Chapman St., Orange         |                        |
| <i>Placer County</i>                         |      |                                     |                        |
| Placer County                                | a    | Auburn                              | Auburn                 |
| Auburn Lumber Co.                            | a    | Auburn                              | Rocklin                |
| Union Granite Co., Mat Ruhkala               | b    | Rocklin                             |                        |
| <i>Riverside County</i>                      |      |                                     |                        |
| Riverside County                             | a    | Courthouse, Riverside               | Thermal, Whitewater    |
| Graham Bros.                                 | a    | Long Beach                          | Bly Junction           |
| Kumpe-Hauser Construction Co., Ormand Quarry | b    | R.F.D. 2, Riverside                 | Corona                 |
| Kuster & Waterburg                           | a    | Corona                              | Riverside              |
| Mutual Rock & Gravel Co.                     | a    | Riverside                           | Grand Terrace          |
| Nevada-Pacific Mineral Co., Inc.             | c    | 3363 Fruitland Rd., Los Angeles     | Blythe                 |
| Palo Verde Commercial Co.                    | a    | Blythe                              | Riverside              |
| City of Riverside                            | b    | Riverside                           | Riverside              |
| The Service Gravel Co., F. A. Braman         | a    | 4324 10th St., Riverside            | Corona                 |
| P. J. Weisel, Industrial Sands               | a, c | La Habra                            |                        |
| <i>Sacramento County</i>                     |      |                                     |                        |
| Sacramento County                            | a    | Sacramento                          | Ben Ali                |
| Cannon & Co.                                 | c    | North Sacramento                    | Del Paso               |
| Del Paso Rock and Gravel Co.                 | a, b | H St. Rd., Sacramento               | Fair Oaks, Folsom      |
| Lord & Bishop                                | a    | Box 547, Oroville                   | Mayhews                |
| Mucke Sand & Gravel Co.                      | a, b | Mayhews                             | Fair Oaks, Mayhew and  |
| Pacific Coast Aggregates, Inc.               | a, b | 85 2d St., San Francisco            | American River         |
| Perkins Gravel Co.                           | a, b | Perkins                             | Perkins                |
| Robert Powell & Co.                          | a    | P.O. Box 815, Sacramento            | American River         |
| <i>San Benito County</i>                     |      |                                     |                        |
| San Benito County                            | a, b | Hollister                           | Logan                  |
| Granite Rock Co.                             | b    | Drawer M., Watsonville              | Logan                  |
| Southern Pacific Co.                         | a, b | 65 Market St., San Francisco        |                        |

a. Sand and gravel. b. Crushed rock (macadam, ballast, rubble, riprap, etc). c. Molding sand. d. Granules for roofing, terrazzo. g. Decomposed granite.

## STONE, MISCELLANEOUS—Continued

Under the heading of 'miscellaneous stone' there are four divisions—crushed rock, grinding mill pebbles, paving blocks, and sand and gravel. Crushed rock includes all crushed rock that is used in macadam, ballast and for concrete; also rock used for rubble and riprap.

| Operator                                      | Product | Address                             | Location of pit or quarry |
|---|---------|-------------------------------------|---------------------------|
| <i>San Bernardino County</i>                  |         |                                     |                           |
| A. T. & S. F. R.R.                            | a       | 609 Kerckhoff Bldg., Los Angeles    | Gale                      |
| Consolidated Rock Products Co.                | a, b    | 656 S. Los Angeles St., Los Angeles | S. Fontana                |
| Deleville Stone Co., Ltd.                     | b       | Box 698, San Pedro                  | La Verne                  |
| Hanawalt Bros.                                | a, b    | 2151 D St., La Verne                | San Bernardino            |
| Fourth Street Rock Crusher, A. O. Johnson     | a       | San Bernardino                      | Barstow                   |
| Pacific Minerals, Inc.                        | d       | 337 10th St., Richmond              | Redlands                  |
| Pinneys Sand & Rock Service                   | a, b    | Redlands                            | Redlands                  |
| Redlands Gravel Co.                           | a, b    | Redlands                            | San Bernardino            |
| San Bernardino Rock and Gravel Co.            | a       | 311 Platt Bldg., San Bernardino     | South Fontana             |
| Southern Pacific Co.                          | b       | 65 Market St., San Francisco        | San Bernardino            |
| Triangle Rock & Gravel Co.                    | a, b    | San Bernardino                      |                           |
| <i>San Diego County</i>                       |         |                                     |                           |
| Calavera Rock Corp.                           | b       | Oceanside                           | Oceanside                 |
| Canyon Rock Co.                               | a, b    | 3911 5th Ave., San Diego            | San Diego                 |
| Crystal Silica Sand Co.                       | a       | Oceanside                           | Oceanside                 |
| H. G. Fenton Material Co.                     | a       | 13th and Imperial Ave., San Diego   | San Diego                 |
| Jones & Klingler, E. J. Klingler              | a       | Mission Valley, San Diego           | Mission Valley            |
| R. M. Hubbard                                 | c       | 406 W. Nutmeg St., San Diego        | San Diego                 |
| John T. Monand                                | f       | Box 381, Carlsbad                   | Oceanside                 |
| Nelson & Sloan                                | a       | P.O. Box 822, Chula Vista           | Chula Vista               |
| Oceanside Rock & Sand Co.                     | a       | Carlsbad                            | Oceanside                 |
| <i>San Francisco County</i>                   |         |                                     |                           |
| Mission Quarry Co.                            | b       | 210 Balboa Bldg., San Francisco     | San Francisco             |
| <i>San Joaquin County</i>                     |         |                                     |                           |
| Frank Marks                                   | a, b    | Newman                              | Tracy                     |
| Pacific Coast Aggregates, Inc.                | a, b    | 85 2d St., San Francisco            | Riverbank                 |
| Santa Fe Sand and Gravel Co., W. A. Arlington | a       | P.O. Box 271, Escalon               | Escalon                   |
| Elmer J. Warner                               | a       | 1128 E. Roosevelt St., Stockton     | Stockton                  |



|   |      |                                       |                                 |                     |                 |
|---|------|---------------------------------------|---------------------------------|---------------------|-----------------|
| <i>San Luis Obispo County</i>                 | a    | San Luis Obispo                       | Oceano                          | Oceano              | Santa Margarita |
| San Luis Obispo County                        | c    | Gutten Molding Sand, Harold E. Gutten | Santa Margarita                 |                     |                 |
| Gularte Gravel Pit, M. Gularte                | a    |                                       |                                 |                     |                 |
| <i>San Mateo County</i>                       | b    | San Mateo County                      | Redwood City                    | Redwood City        | Half Moon Bay   |
| M. F. Cunha, Vascos Quarry                    | b    |                                       | Main St., Half Moon Bay         |                     | Colma           |
| Holy Cross Cemetery                           | b    |                                       | Colma                           |                     | Daly City       |
| Industrial Mineral Products, W. B. Vestal     | c    |                                       | 772 Bryant St., San Francisco   |                     |                 |
| Market St. Ry. Co., Daly's Quarry             | b    |                                       | 58 Sutter St., San Francisco    |                     |                 |
| <i>Santa Barbara County</i>                   | a    | Gates Gravel Plant, Frank H. Gates    | Santa Maria                     | Sisquoc             |                 |
| Lompoc, Harry Howerton, Street Supt.          | a    |                                       | Lompoc                          | Lompoc              |                 |
| <i>Santa Clara County</i>                     | a    | Arrowhead Gravel Co.                  | 20 Maple Ave., Watsonville      | Watsonville         |                 |
| Carroll Gravel Pit, R. D. Carroll             | a    |                                       | R.F.D. 4, Box 310A, San Jose    | San Jose            |                 |
| A. G. Jahn                                    | a    |                                       | R.F.D. 4, Box 362, San Jose     | San Jose            |                 |
| Jas. A. Lemieux                               | a    |                                       | Box 341, Senter Rd., San Jose   | San Jose            |                 |
| Los Gatos Sand and Gravel Co.                 | a    |                                       | Los Gatos                       | Los Gatos           |                 |
| J. W. Lovejoy                                 | a    |                                       | R.F.D. 1, Box 88, Mountain View | Mountain View       |                 |
| Pacific Coast Aggregates, Inc.                | a, b |                                       | 85 2d St., San Francisco        | Coyote and Campbell |                 |
| Robinson & Rhodes, Stanford Quarry            | b    |                                       | Box 325, Palo Alto              | Palo Alto           |                 |
| Southern Pacific Co.                          | a    |                                       | 65 Market St., San Francisco    | Coyote              |                 |
| Sunnyvale Gravel Co.                          | a    |                                       | Sunnyvale                       | Sunnyvale, Alamitos |                 |
| <i>Santa Cruz County</i>                      | b    | Santa Cruz County                     | Santa Cruz                      | Santa Cruz          |                 |
| Central Supply Co.                            | a    |                                       | P.O. Box 524, Santa Cruz        | Santa Cruz          |                 |
| Mead Felton Sand & Gravel Co., H. G. Mead     | a    |                                       | Felton                          | Felton              |                 |
| Pacific Limestone Products Co.                | b    |                                       | Santa Cruz                      | Santa Cruz          |                 |
| Santa Cruz Portland Cement Co.                | b    |                                       | Crocker Bldg., San Francisco    | Davenport           |                 |
| <i>Shasta County</i>                          | a, b | Shasta County                         | Redding                         | Redding             |                 |
| Diesterhorst Gravel Plant, Chas. Diesterhorst | a, b |                                       | 1040 Liberty St., Redding       | Redding             |                 |

## STONE, MISCELLANEOUS—Continued

Under the heading of 'miscellaneous stone' there are four divisions—crushed rock, grinding mill pebbles, paving blocks, and sand and gravel. Crushed rock includes all crushed rock that is used in macadam, ballast and for concrete; also rock used for rubble and riprap.

| Operator   | Product | Address                            | Location of pit or quarry |
|--|---------|------------------------------------|---------------------------|
| <i>Siskiyou County</i>                                 |         |                                    |                           |
| Siskiyou County  | a, b    | Yreka                              | Yreka                     |
| Hemstreet & Bell                                       | b       | 501 11th St., Marysville           | Yreka                     |
| A. G. Fiedlerman                                       | a       | Yreka                              | Yreka                     |
| King Solomon Mines Co.                                 | f       | Kroger Bldg., San Francisco        | Black Bear                |
| W. D. Miller Cons. Co.                                 | a       | Klamath Falls, Ore.                | Graham Siding             |
| A. Young   | a       | Yreka                              | Yreka                     |
| <i>Solano County</i>                                   |         |                                    |                           |
| J. M. Nelson, Cordelia Quarry                          | b       | Cordelia                           | Cordelia                  |
| <i>Sonoma County</i>                                   |         |                                    |                           |
| Basalt Rock Co.  | a       | 8th St., Napa                      | Healdsburg                |
| S. Cabrol  | b       | Glen Ellen                         | Glen Ellen                |
| Hein Bros. Basalt Rock Co., Mark Hein, Pres.           | b       | Petaluma                           | Petaluma                  |
| Independent Gravel Co.                                 | a       | Forestville                        | Forestville               |
| Northwest Gravel Co.                                   | a       | 844-A Mills Bldg., San Francisco   | Chianti                   |
| Petaluma and Santa Rosa, E. R. R., E. H. Maggard, Mgr. | b       | Petaluma                           | Stony Point               |
| Stony Point Quarry, W. A. Wilson                       | b       | Petaluma, Star Rt.                 | Stony Point               |
| <i>Stanislaus County</i>                               |         |                                    |                           |
| Atlas Olympia Co.                                      | a       | 209 Underwood Bldg., San Francisco | Orange Blossom            |
| W. Haslan  | a       | Oakdale                            | Oakdale                   |
| Frank B. Marks   | a       | Newman                             | Crows Landing             |
| Oakdale Irrigation Dist., M. E. Robinson, Auditor      | a       | Oakdale                            | Oakdale                   |
| Putman Sand & Gravel Co.                               | a       | Modesto                            | Modesto                   |
| Rinehart Sand Pit, Rinehart Bros.                      | a       | Modesto                            | Modesto                   |
| J. P. Scanlon, Scanlon Gravel Pit                      | a       | Patterson                          | Crows Landing             |
| Southern Pacific Co.                                   | a       | 65 Market St., San Francisco       | Newman                    |
| <i>Tehama County</i>                                   |         |                                    |                           |
| Tehama County  | a, b    | Red Bluff                          |                           |
| <i>Trinity County</i>                                  |         |                                    |                           |
| Trinity County   | a       | Weaverville                        |                           |
| Hemstreet & Bell                                       | b       | 501 11th St., Marysville           |                           |

|  |                                |                    |
|--|--------------------------------|--------------------|
| <i>Tulare County</i>                       |                                |                    |
| Tulare County                              | Visalia                        | Porterville        |
| J. J. Dugan & Sons                         | R.F.D. 2, Box 120, Porterville |                    |
| Hemstreet & Bell                           | 501 11th St., Marysville       | Porterville        |
| O. C. Jeffers                              | Star Rt. 2, Porterville        | Porterville        |
| Nelson Concrete Pipe Co., John Nelson      | Box 32, Strathmore             | Strathmore         |
| Porterville Cement Pipe Co.                | P.O. Box 396, Porterville      | Porterville        |
| Supt. Sequoia National Park                | Three Rivers                   | Sequoia Natl. Park |
| Tulare Rock Co., O. Holliday               | Lindsay                        | Lindsay            |
| <i>Ventura</i>                             |                                |                    |
| Ventura County                             | Ventura                        | El Rio             |
| El Rio Rock Co.                            | P.O. Box 381, Ventura          | Piru               |
| Piru Rock Co.                              | Piru                           | Ventura            |
| Santa Clara Sand and Gravel Co.            | P.O. Box 1002, Ventura         | Santa Paula        |
| Santa Paula Rock Co.                       | Willard Bridge, Santa Paula    | Saticoy-Ventura    |
| Saticoy Rock Products Co.                  | Saticoy                        | Ventura            |
| Ventura Velvet Molding Sand, Chas. A. Cole | 1355 Church St., Ventura       | Rockbank           |
| Southern Pacific Co.                       | 65 Market St., San Francisco   |                    |
| <i>Yolo County</i>                         |                                |                    |
| C. and H. Gravel Co., J. J. Hartley        | Davis                          | Davis              |
| Yolo Gravel Co.                            | P.O. Box 7, Yolo               | Yolo               |
| <i>Yuba County</i>                         |                                |                    |
| Hemstreet & Bell                           | 501 11th St., Marysville       | Marysville         |
| N. F. Makle                                | 715 D St., Marysville          | Marysville         |
| Pacific Coast Aggregates, Inc.             | 85 2d St., San Francisco       | Marysville         |
| Yuba River Sand Co.                        | Marysville                     | Marysville         |

a. Sand and gravel. b. Crushed rock (macadam, ballast, rubble, riprap, etc.). c. Molding sand. f. Tube-mill pebbles. g. Decomposed granite.

SULPHUR

| Operator  | Address   | Location of mine |
|---|---|------------------|
| <i>Alpine County</i><br>Leviathan Sulphur Co., H. E. Bierch, Pres.....          | 1010 Richfield Bldg., Los Angeles.....                              | Markleville      |
| <i>Inyo County</i><br>Delaware Sulphur Mines.....<br>West Coast Sulphur Co..... | 2131 Bonita Dr., Glendale.....<br>1427 E. 4th St., Los Angeles..... | Zurich<br>Zurich |

TUNGSTEN

| Operator  | Address                            | Location of mine |
|---|------------------------------------|------------------|
| <i>Kern County</i><br>Herbert Salinger.....                         | 112 Market St., San Francisco..... | Bakersfield      |
| <i>San Bernardino County</i><br>Atolia Mining Co., A. V. Udell..... | Crocker Bldg., San Francisco.....  | Randsburg        |
| <i>Tulare County</i><br>Tungsten Mine, H. O. Johanson.....          | Posey.....                         | Posey            |

WOLLASTONITE

| Operator                                     | Address                                  | Location of mine |
|--|--|------------------|
| <i>Kern County</i><br>John T. Thorndyke..... | 1014½ N. Mariposa Ave., Los Angeles..... | Code Siding      |

ZINC

| Mine   | Operator                | Address                           | Location of mine |
|--|-------------------------|-----------------------------------|------------------|
| <i>Inyo County</i><br>Estelle & Cerro Gordo..... | Estelle Mines Corp..... | 972 S. 4th Ave., Los Angeles..... | Keeler           |



## APPENDIX

## MINING BUREAU ACT

Chap. 670 [Stats. 1913]; amended, Chap. 280 [Stats. 1929]; amended, Chap. 748 [Stats. 1933].

An act establishing a state mining bureau, creating the office of state mineralogist, fixing his salary and prescribing his powers and duties; providing for the employment of officers and employees of said bureau, making it the duty of persons in charge of mines, mining operations and quarries to make certain reports, providing for the investigation of mining operations, dealings and transactions and the prosecution for defrauding, swindling and cheating therein, creating a state mining bureau fund for the purpose of carrying out the provisions of this act and repealing an act entitled "An act to provide for the establishment, maintenance, and support of a bureau, to be known as the state mining bureau, and for the appointment and duties of a board of trustees, to be known as the board of trustees of the state mining bureau, who shall have the direction, management and control of said state mining bureau, and to provide for the appointment, duties, and compensation of a state mineralogist, who shall perform the duties of his office under the control, direction and supervision of the board of trustees of the state mining bureau," approved March 23, 1893, and all acts amendatory thereof and supplemental thereto or in conflict herewith.

[Approved June 16, 1913. In effect August 10, 1913.]

[Amendment (Sec. 16) approved May 14, 1929. In effect August 14, 1929.]

[Amendment (Sec. 10) approved June 5, 1933. In effect August 21, 1933.]

*The people of the State of California do enact as follows:*

SECTION 1. There is hereby created and established a state mining bureau. The chief officer of such bureau shall be the state mineralogist, which office is hereby created.

SEC. 2. It shall be the duty of the governor of the State of California and he is hereby empowered to appoint a citizen and resident of this state, having a practical and scientific knowledge of mining, to the office of state mineralogist. Said state mineralogist shall hold his office at the pleasure of the governor. He shall be a civil executive officer. He shall take and subscribe the same oath of office as other state officers. He shall receive for his services a salary of three hundred dollars (\$300) per month, to be paid at the same time and in the same manner as the salaries of other state officers. He shall also receive his necessary traveling expenses when traveling on the business of his office. He shall give bond for the faithful performance of his duties in the sum of ten thousand dollars (\$10,000), said bond to be approved by the governor of the State of California.

SEC. 3. Said state mineralogist shall employ competent geologists, field assistants, qualified specialists and office employees when necessary in the execution of his plans and operations of the bureau, and fix their compensation. The said employees shall be allowed their necessary traveling expenses when traveling on the business of said department and shall hold office at the pleasure of said state mineralogist.

SEC. 4. It shall be the duty of said state mineralogist to make, facilitate, and encourage, special studies of the mineral resources and mineral industries of the state. It shall be his duty: to collect statistics concerning the occurrence and production of the economically important minerals and the methods pursued in making their valuable constituents available for commercial use; to make a collection of typical geological and mineralogical specimens, especially those of economic and commercial importance, such collection constituting the museum of the state mining bureau; to provide a library of books, reports, drawings, bearing upon the mineral industries, and sciences of mineralogy and geology, and arts of mining and metallurgy, such library constituting the library of the state mining bureau; to make a collection of models, drawings and descriptions of the mechanical appliances used

in mining and metallurgical processes; to preserve and so maintain such collections and library as to make them available for reference and examination, and open to public inspection at reasonable hours; to maintain, in effect, a bureau of information concerning the mineral industries of this state, to consist of such collections and library, and to arrange, classify, catalogue, and index the data therein contained, in a manner to make the information available to those desiring it; to issue from time to time such bulletins as he may deem advisable concerning the statistics and technology of the mineral industries of this state.

SEC. 5. It is hereby made the duty of the owner, lessor, lessee, agent, manager or other person in charge of each and every mine, of whatever kind or character, within the state, to forward to the state mineralogist, upon his request, at his office not later than the thirty-first day of March, in each year, a detailed report upon forms which will be furnished showing the character of the mine, the number of men then employed, the method of working such mine and the general condition thereof, the total mineral production for the past year, and such owner, lessor, lessee, agent, manager or other person in charge of any mine within the state must furnish whatever information relative to such mine as the state mineralogist may from time to time require for the proper discharge of his official duties. Any owner, lessor, lessee, agent, manager or other person in charge of each and every mine of whatever kind or character within the state, who fails to comply with the above provisions shall be deemed guilty of a misdemeanor.\*

SEC. 6. The state mineralogist now performing the duties of the office of state mineralogist shall perform the duties of the office of state mineralogist as in this act provided until the appointment and qualification of his successor as in this act provided.

SEC. 7. The said state mineralogist shall take possession, charge and control of the offices now occupied and used by the board of trustees and state mineralogist and the museum, library and laboratory of the mining bureau located in San Francisco as provided for by a certain act of the legislature approved March 23, 1893, and hereafter referred to in section fourteen hereof, and shall maintain such offices, museum, library and laboratory for the purposes provided in this act.

SEC. 8. Said state mineralogist or qualified assistant shall have full power and authority at any time to enter or examine any and all mines, quarries, wells, mills, reduction works, refining works and other mineral properties or working plants in this state in order to gather data to comply with the provisions of this act.

SEC. 9. The state mineralogist shall make a biennial report to the governor on or before the fifteenth day of September next preceding the regular session of the legislature.

SEC. 10. All moneys received by the State Mining Bureau (or State Division of Mines) or any officer thereof, from sales of publications issued by said bureau, shall be deposited at least once each month in the State treasury to the credit of a fund which is hereby created and designated "Division of mines revolving printing fund." Said fund shall be used and is hereby appropriated for the use of said bureau in addition to such other funds as may be from time to time appropriated by the Legislature, for the printing and publishing of reports, bulletins, and maps issued by the said bureau. The State Controller is authorized to require financial reports from the State Mining Bureau or any officer thereof.

SEC. 11. The said state mineralogist is hereby authorized and empowered to receive on behalf of this state, for the use and benefit of the state mining bureau, gifts, bequests, devises and legacies of real or other property and to use the same in accordance with the wishes of the donors, and if no instructions are given by said donors, to manage, use, and dispose of the gifts and bequests and legacies for the best interests of said state mining bureau and in such manner as he may deem proper.

SEC. 12. The state mineralogist may, whenever he deems it advisable, prepare a special collection of ores and minerals of California to be sent to or used at any world's fair or exposition in order to display the mineral wealth of the state.

SEC. 13. The state mineralogist is hereby empowered to fix a price upon and to dispose of to the public, at such price, any and all publications of the state mining bureau, including reports, bulletins, maps, registers or other publications, such price

\* Sec. 19 of the Penal Code of California provides: "Except in cases where a different punishment is prescribed by this code, every offense declared to be a misdemeanor is punishable by imprisonment in a county jail not exceeding six months, or by a fine not exceeding five hundred dollars, or by both."



shall approximate the cost of publication and distribution. Any and all sums derived from such disposition, or from gifts or bequests made, as hereinbefore provided must be accounted for by said state mineralogist and turned over to the state treasurer to be credited to the mining bureau fund as provided for in section ten. He is also empowered to furnish without cost to public libraries the publications of the bureau and to exchange publications with other geological surveys and scientific societies, etc.

SEC. 14. The state mineralogist provided for by this act shall be the successor in interest of the board of trustees of the state mining bureau, and the state mineralogist, under and by virtue of that certain act, entitled "An act to provide for the establishment, maintenance, and support of a bureau, to be known as the state mining bureau, and for the appointment and duties of a board of trustees, to be known as the board of trustees of the state mining bureau, who shall have the direction, management, and control of said state mining bureau, and to provide for the appointment, duties, and compensation of a state mineralogist, who shall perform the duties of his office under the control, direction and supervision of the board of trustees of the state mining bureau," approved March 23, 1893, and all books, papers, documents, personal property, records, and property of every kind and description obtained or possessed, or held or controlled by the said board of trustees of the said state mining bureau, and the state mineralogist, and the clerks and employees thereof, under the provisions of said act of March 23, 1893, or any act supplemental thereto or amendatory thereof, shall immediately be turned over and delivered to the said state mineralogist herein provided for, who shall have charge and control thereof.

SEC. 15. That certain act entitled "An act to provide for the establishment, maintenance, and support of a bureau, to be known as the state mining bureau, and for the appointment and duties of a board of trustees, to be known as the board of trustees of the state mining bureau, and to provide for the appointment, duties and compensation of a state mineralogist, who shall perform the duties of his office under the control, direction, and supervision of the board of trustees of the state mining bureau," approved March 23, 1893, together with all acts amendatory thereof and supplemental thereto and all acts in conflict herewith are hereby repealed.

SEC. 16. For the purpose of this act and as used herein the term "mine" is hereby defined to embrace and include all mineral bearing properties of whatever kind or character whether underground, quarry, pit, well, spring or other source from which any mineral substance is or may be obtained, and the term "mineral" for the purposes of this act and whenever so used shall embrace and include any and all mineral products both metallic and nonmetallic, solid, liquid or gaseous, and mineral waters of whatever kind or character.

## DEPARTMENT OF NATURAL RESOURCES ACT

Chap. 128 [Stats. 1927]; amended, Chap. 307 [Stats. 1929.]

An act to add a new article to chapter three of title one of part three of the Political Code to be numbered article two j, embracing sections three hundred seventy-three to three hundred seventy-three i, relating to a department of natural resources.

[Approved by the Governor April 13, 1927.]

[Amendment approved May 18, 1929.]

*The people of the State of California do enact as follows:*

SECTION 1. The Political Code is hereby amended by adding a new article to chapter III of title I of part III thereof, to be numbered article IIj, embracing sections 373 to 373i and to read as follows:

## ARTICLE IIj.

## DEPARTMENT OF NATURAL RESOURCES.

373. A department of the government of the State of California to be known as the department of natural resources is hereby created. The department shall be conducted under the control of an executive officer to be known as the director of natural resources, which office is hereby created. The director shall be appointed by and hold office at the pleasure of the governor and shall receive a salary of six thousand dollars per annum.

Except as in this article otherwise provided, the provisions of article II of this chapter, title, and part of the Political Code as adopted at the forty-fourth session of the Legislature and as the same may be amended from time to time, shall govern and apply to the conduct of the department of natural resources in every respect the same as if such provisions were herein set forth at length and wherever in said article II the term "head of the department" or similar designation occurs, the same shall for the purposes of this article mean the director of natural resources.

373a. For purposes of administration the department shall be forthwith organized by the director thereof, subject to the approval of the governor, in such manner as he shall deem necessary to properly segregate and conduct the work of the department, and the director shall have power to appoint, in accordance with the civil service and other provisions of law, such deputies, officers and other expert and clerical assistants as may be necessary. The work of the department is hereby divided into at least four divisions to be known as the division of forestry, the division of parks, the division of fish and game, and the division of mines.

373b. The division of mines shall be administered through a chief who shall be appointed by the director of natural resources upon the nomination of the state mining board, the chief to be a technically trained mining engineer and to be known as the state mineralogist; such chief shall receive a salary of six thousand dollars per annum. General policies for the guidance of the division of mines shall be determined by a board to be known as the state mining board, which shall consist of five members appointed by and to hold office at the pleasure of the governor.

373c. The division of forestry shall be administered through a chief of division who shall be known as the state forester, who shall be a technically trained forester, appointed by the director of natural resources upon nomination by the state board of forestry hereinafter provided. General policies for the guidance of the division of forestry shall be determined by a state board of forestry which shall consist of seven members appointed by and holding office at the pleasure of the governor. Of the seven members one shall be familiar with the pine timber industry, one with the redwood industry, one with the live stock industry, one with general agriculture and one with the problems of water conservation.

373d. The division of parks shall be administered through a chief of division who shall be appointed by the director of natural resources upon nomination by the state park commission hereinafter provided. General policies for the administration of the state park system shall be determined by the state park commission

which is hereby created to consist of five members appointed by the governor and holding office at his pleasure.

373e. The division of fish and game shall be administered through a fish and game commission consisting of three members appointed by and holding office at the pleasure of the governor.

373f. The chiefs of the divisions of forestry and parks respectively shall receive such salaries as may be determined by the director with the approval of the governor. The director of natural resources and the chief of each division before entering upon his duties shall execute to the State of California an official bond in the penal sum of twenty-five thousand dollars conditioned upon the faithful performance of his duties. The members of the board of forestry, the state parks commission and fish and game commission shall serve without compensation, but shall be entitled to their actual expenses incurred in the performance of their duties.

373g. The department of natural resources shall succeed to and is hereby invested with all the duties, powers, purposes, responsibilities and jurisdiction of the state mining bureau, state mineralogist, department of petroleum and gas, state oil and gas supervisor, state forester, state board of forestry, California redwood park commission, San Pasqual battlefield commission, Mount Diablo park commission, state fish and game commission, state fish and game commissioners, and, except as herein otherwise provided, of the several officers, deputies and employees of such bodies and offices, and whenever by the provisions of any statute or law now in force or that may hereafter be enacted a duty or jurisdiction is imposed or authority conferred upon any of said officers, offices, bodies, deputies or employees by any statute the enforcement of which is transferred to the department, such duty, jurisdiction and authority are hereby imposed upon and transferred to the department of natural resources and the appropriate officers thereof with the same force and effect as though the title of said department of natural resources had been specifically set forth and named therein in lieu of the name of any such body, office, officer, deputy or employee. Said bodies and offices, the duties, powers, purposes, responsibilities and jurisdiction of which are so transferred and vested in the department of natural resources, and the positions of all officers, deputies and employees thereunder, are and each of them is hereby abolished and shall have no further legal existence, but the statutes and laws under which they existed and all laws prescribing their duties, powers, purposes, responsibilities and jurisdiction, together with all lawful rules and regulations established thereunder are hereby expressly continued in force.

The department of natural resources shall be in possession and control of all records, books, papers, offices, equipment, supplies, moneys, funds, appropriations, land and other property real or personal now or hereafter held for the benefit or use of said bodies, offices and officers.

The boards of district oil and gas commissioners, the offices of district oil and gas commissioners and the board of review, correction and equalization created by the act approved June 10, 1915, establishing the department of petroleum and gas, are hereby respectively continued in force with the powers, duties, responsibilities and jurisdiction in them vested by the provisions of said act approved June 10, 1915, as amended; *provided*, that said board of review shall consist of the director of natural resources, the director of finance and the chairman of the state board of equalization.

373h. The management and control of the property acquired by the State of California under or pursuant to the provisions of the act entitled "An act to accept the gift to the state of San Pasqual battlefield in San Diego county, to provide for collecting and systematizing the history of said battle, for determining the exact location thereof, and to report a suitable method of marking said battlefield and commemorating the heroism of those Americans who fought and died there," approved May 11, 1919, is hereby transferred to and vested in the department of natural resources.

373i. From and after the date upon which this act takes effect, the department of natural resources shall be and is hereby authorized and empowered to expend the moneys in any appropriation or in special fund in the state treasury now remaining or made available by law for the administration of the provisions of all the statutes the administration of which is committed to the department, or for the use, support, or maintenance of any board, bureau, commission, department, office or officer whose duties, powers, and functions are, by the provisions of this article, transferred to and conferred upon the department of natural resources. Such expenditures by the department shall be made in accordance with law in carrying out the purposes for which such appropriations were made or such special funds created.

PUBLICATIONS OF THE DIVISION OF MINES

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During the past fifty-four years, in carrying out the provisions of the organic act creating the former California State Mining Bureau, there have been published many reports, bulletins and maps which go to make up a library of detailed information on the mineral industry of the State, a large part of which could not be duplicated from any other source.

One feature that has added to the popularity of the publications is that many of them have been distributed without cost to the public, and even the more elaborate ones have been sold at a price which barely covers the cost of printing.

Owing to the fact that funds for the advancing of the work of this department have usually been limited, the reports and bulletins mentioned are printed in limited editions many of which are now entirely exhausted.

Copies of such publications are available, however, in the offices of the Division of Mines, in the Ferry Building, San Francisco; State Building, Los Angeles; State Office Building, Sacramento; Redding; and Division of Oil and Gas at Santa Barbara, Santa Paula, Coalinga, Taft, Bakersfield. They may also be found in many public, private and technical libraries in California and other states and foreign countries.

A catalog of all publications from 1880 to 1917, giving a synopsis of their contents, is issued as Bulletin No. 77.

Publications in stock may be obtained by addressing any of the above offices and enclosing the requisite amount in the case of publications that have a list price. Only coin, stamps or money orders should be sent, and it will be appreciated if remittance is made in this manner rather than by personal check.

Money orders should be made payable to the Division of Mines.

**NOTE.**—The Division of Mines frequently receives requests for some of the early Reports and Bulletins now out of print, and it will be appreciated if parties having such publications and wishing to dispose of them will advise this office.

## REPORTS

Asterisks (\*\*) indicate the publication is out of print.

|   | Price  | Shipping<br>Charges |
|---|--------|---------------------|
| <b>**First Annual Report of the State Mineralogist, 1880, 43 pp.</b><br>Henry G. Hanks.....   | -----  | -----               |
| <b>**Second Annual Report of the State Mineralogist, 1882, 514 pp.,</b><br>4 illustrations, 1 map. Henry G. Hanks.....  | -----  | -----               |
| <b>**Third Annual Report of the State Mineralogist, 1883, 111 pp.,</b><br>21 illustrations. Henry G. Hanks.....   | -----  | -----               |
| <b>**Fourth Annual Report of the State Mineralogist, 1884, 410 pp.,</b><br>7 illustrations. Henry G. Hanks.....   | -----  | -----               |
| <b>**Fifth Annual Report of the State Mineralogist, 1885, 234 pp.,</b><br>15 illustrations, 1 geological map. Henry G. Hanks.....   | -----  | -----               |
| <b>**Sixth Annual Report of the State Mineralogist, Part I, 1886,</b><br>145 pp., 3 illustrations, 1 map. Henry G. Hanks.....   | -----  | -----               |
| <b>**Part II, 1887, 222 pp., 36 illustrations. William Ireland, Jr....</b>  | -----  | -----               |
| <b>**Seventh Annual Report of the State Mineralogist, 1887, 315 pp.</b><br>William Ireland, Jr.....   | -----  | -----               |
| <b>**Eighth Annual Report of the State Mineralogist, 1888, 948 pp.,</b><br>122 illustrations. William Ireland, Jr.....  | -----  | -----               |
| <b>**Ninth Annual Report of the State Mineralogist, 1889, 352 pp.,</b><br>57 illustrations, 2 maps. William Ireland, Jr.....  | -----  | -----               |
| <b>**Tenth Annual Report of the State Mineralogist, 1890, 983 pp.,</b><br>179 illustrations, 10 maps. William Ireland, Jr.....  | -----  | -----               |
| <b>Eleventh Report (First Biennial) of the State Mineralogist, for</b><br>the two years ending September 15, 1892, 612 pp., 73 illus-<br>trations, 4 maps. William Ireland, Jr.....   | \$1.00 | \$0.20              |
| <b>**Twelfth Report (Second Biennial) of the State Mineralogist,</b><br>for the two years ending September 15, 1894, 541 pp., 101<br>illustrations, 5 maps. J. J. Crawford.....   | -----  | -----               |
| <b>**Thirteenth Report (Third Biennial) of the State Mineralogist,</b><br>for the two years ending September 15, 1896, 726 pp., 93<br>illustrations, 1 map. J. J. Crawford.....   | -----  | -----               |
| <b>Chapters of the State Mineralogist's Report, Biennial Period,</b><br>1913-1914, Fletcher Hamilton:   |        |                     |
| <b>**Mines and Mineral Resources, Amador, Calaveras and Tuolumne</b><br>Counties, 172 pp., paper.....   | -----  | -----               |
| <b>Mines and Mineral Resources, Colusa, Glenn, Lake, Marin,</b><br>Napa, Solano, Sonoma and Yolo Counties, 208 pp., paper....   | .50    | .10                 |
| <b>**Mines and Mineral Resources, Del Norte, Humboldt and Mendo-</b><br>cino Counties, 59 pp., paper.....   | -----  | -----               |
| <b>**Mines and Mineral Resources, Fresno, Kern, Kings, Madera,</b><br>Mariposa, Merced, San Joaquin and Stanislaus Counties,<br>220 pp., paper.....   | -----  | -----               |
| <b>**Mines and Mineral Resources of Imperial and San Diego Coun-</b><br>ties, 113 pp., paper.....   | -----  | -----               |
| <b>**Mines and Mineral Resources, Shasta, Siskiyou and Trinity</b><br>Counties, 180 pp., paper.....   | -----  | -----               |
| <b>**Fourteenth Report of the State Mineralogist, for the Biennial</b><br>Period 1913-1914, Fletcher Hamilton, 1915:<br>A General Report on the Mines and Mineral Resources of<br>Amador, Calaveras, Tuolumne, Colusa, Glenn, Lake, Marin,<br>Napa, Solano, Sonoma, Yolo, Del Norte, Humboldt, Mendo-<br>cino, Fresno, Kern, Kings, Madera, Mariposa, Merced, San<br>Joaquin, Stanislaus, San Diego, Imperial, Shasta, Siskiyou<br>and Trinity Counties, 974 pp., 275 illustrations, cloth..... | -----  | -----               |
| <b>Chapters of the State Mineralogist's Report, Biennial Period,</b><br>1915-1916, Fletcher Hamilton:   |        |                     |
| <b>**Mines and Mineral Resources, Alpine, Inyo and Mono Counties,</b><br>176 pp., paper.....  | -----  | -----               |
| <b>Mines and Mineral Resources, Butte, Lassen, Modoc, Sutter and</b><br>Tehama Counties, 91 pp., paper.....   | .50    | .05                 |
| <b>**Mines and Mineral Resources, El Dorado, Placer, Sacramento</b><br>and Yuba Counties, 198 pp., paper.....   | -----  | -----               |
| <b>Mines and Mineral Resources, Monterey, San Benito, San Luis</b><br>Obispo, Santa Barbara and Ventura Counties, 183 pp.,<br>paper.....  | .65    | .10                 |
| <b>**Mines and Mineral Resources, Los Angeles, Orange and River-</b><br>side Counties, 136 pp., paper.....  | -----  | -----               |
| <b>**Mines and Mineral Resources, San Bernardino and Tulare</b><br>Counties, 186 pp., paper.....  | -----  | -----               |

## REPORTS—Continued

Asterisks (\*\*) indicate the publication is out of print.

|  | Price  | Shipping Charges |
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| **Fifteenth Report of the State Mineralogist, for the Biennial Period 1915-1916, Fletcher Hamilton, 1917:<br>A General Report on the Mines and Mineral Resources of Alpine, Inyo, Mono, Butte, Lassen, Modoc, Sutter, Tehama, Placer, Sacramento, Yuba, Los Angeles, Orange, Riverside, San Benito, San Luis Obispo, Santa Barbara, Ventura, San Bernardino and Tulare Counties, 990 pp., 413 illustrations, cloth ----- |        |                  |
| Chapters of the State Mineralogist's Report, Biennial Period, 1917-1918, Fletcher Hamilton:  |        |                  |
| **Mines and Mineral Resources of Nevada County, 270 pp., paper   |        |                  |
| Mines and Mineral Resources of Plumas County, 188 pp., paper   | \$0.50 | \$0.10           |
| Mines and Mineral Resources of Sierra County, 144 pp., paper   | .50    | .10              |
| Seventeenth Report of the State Mineralogist, 1920, 'Mining in California during 1920,' Fletcher Hamilton; 562 pp., 71 illustrations, cloth -----  | 1.75   | .25              |
| Eighteenth Report of the State Mineralogist, 1922, 'Mining in California,' Fletcher Hamilton. Chapters published monthly beginning with January, 1922:   |        |                  |
| **January, **February, **March, **April, **May, **June, July, August, September, October, **November, December, 1922   | .25    | .05              |
| Chapters of Nineteenth Report of the State Mineralogist, 'Mining in California,' Fletcher Hamilton and Lloyd L. Root. January, February, March, September, 1923-----   | .25    | .05              |
| Chapters of Twentieth Report of the State Mineralogist, 'Mining in California,' Lloyd L. Root. Published quarterly. January, April, **July, October, 1924, per copy-----   | .25    | .05              |
| Chapters of Twenty-first Report of the State Mineralogist, 'Mining in California,' Lloyd L. Root. Published quarterly:   |        |                  |
| January, 1925, Mines and Mineral Resources of Sacramento, Monterey and Orange Counties-----  | .25    | .05              |
| April, 1925, Mines and Mineral Resources of Calaveras, Merced, San Joaquin, Stanislaus and Ventura Counties-----   | .25    | .05              |
| July, 1925, Mines and Mineral Resources of Del Norte, Humboldt and San Diego Counties-----   | .25    | .10              |
| **October, 1925, Mines and Mineral Resources of Siskiyou, San Luis Obispo and Santa Barbara Counties-----  |        |                  |
| Chapters of Twenty-second Report of the State Mineralogist, 'Mining in California,' Lloyd L. Root. Published quarterly:  |        |                  |
| **January, 1926, Mines and Mineral Resources of Trinity and Santa Cruz Counties-----   |        |                  |
| April, 1926, Mines and Mineral Resources of Shasta, San Benito and Imperial Counties-----  | .25    | .10              |
| July, 1926, Mines and Mineral Resources of Marin and Sonoma Counties-----  | .25    | .05              |
| **October, 1926, Mines and Mineral Resources of El Dorado and Inyo Counties, also report on Minaret District, Madera County-----   |        |                  |
| Chapters of Twenty-third Report of the State Mineralogist, 'Mining in California,' Lloyd L. Root. Published quarterly:   |        |                  |
| January, 1927, Mines and Mineral Resources of Contra Costa County; Santa Catalina Island-----  | .25    | .10              |
| April, 1927, Mines and Mineral Resources of Amador and Solano Counties-----  | .25    | .05              |
| July, 1927, Mines and Mineral Resources of Placer and Los Angeles Counties-----  | .25    | .10              |
| October, 1927, Mines and Mineral Resources of Mono County-----   | .25    | .05              |
| Chapters of Twenty-fourth Report of the State Mineralogist, 'Mining in California,' Lloyd L. Root. Published quarterly:  |        |                  |
| January, 1928, Mines and Mineral Resources of Tuolumne County-----   | .25    | .05              |
| April, 1928, Mines and Mineral Resources of Mariposa County-----   | .25    | .05              |
| July, 1928, Mines and Mineral Resources of Butte and Tehama Counties-----  | .25    | .05              |
| October, 1928, Mines and Mineral Resources of Plumas and Madera Counties-----  | .25    | .05              |
| Chapters of Twenty-fifth Report of the State Mineralogist, 'Mining in California,' Walter W. Bradley. Published quarterly:   |        |                  |
| **January, 1929, Mines and Mineral Resources of Lassen, Modoc and Kern Counties; also on Special Placer Machines-----  |        |                  |

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|---|--------|---------------------|
| April, 1929, Mines and Mineral Resources of Sierra, Napa, San Francisco and San Mateo Counties-----   | \$0.25 | \$0.10              |
| July, 1929, Mines and Mineral Resources of Colusa, Fresno and Lake Counties-----  | .25    | .10                 |
| October, 1929, Mines and Mineral Resources of Glenn, Alameda, Mendocino and Riverside Counties-----   | .25    | .10                 |
| Chapters of Twenty-sixth Report of the State Mineralogist, 'Mining in California,' Walter W. Bradley. Published quarterly:  |        |                     |
| January, 1930, Mines and Mineral Resources of Santa Clara County; also Barite in California-----  | .25    | .05                 |
| April, 1930, Mines and Mineral Resources of Nevada County; also Mineral Paint Materials in California-----  | .25    | .05                 |
| July, 1930, Mines and Mineral Resources of Yuba and San Bernardino Counties; also Commercial Grinding Plants in California-----   | .25    | .10                 |
| October, 1930, Mines and Mineral Resources of Butte, Kings and Tulare Counties; also Geology of Southwestern Mono County (Preliminary)-----   | .25    | .10                 |
| Chapters of Twenty-seventh Report of the State Mineralogist, 'Mining in California,' Walter W. Bradley. Published quarterly:  |        |                     |
| January, 1931, Preliminary Report on Economic Geology of the Shasta Quadrangle. Beryllium and Beryl. The New Tariff and Nonmetallic Products. Crystalline Talc. Decorative Effects in Concrete-----   | .25    | .10                 |
| April, 1931, Stratigraphy of the Kreyenhagen Shale. Diatoms and Silicoflagellates of the Kreyenhagen Shale. Foraminifera of the Kreyenhagen Shale. Geology of Santa Cruz Island-----  | .25    | .10                 |
| July, 1931. (Yuba, San Bernardino.) Feldspar, Silica, Andalusite and Cyanite Deposits of California. Note on a Deposit of Andalusite in Mono County; its occurrence and chemical importance. Bill creating Trinity and Klamath River Fish and Game District and its effect upon mining-----   | .25    | .10                 |
| October, 1931. (Alpine.) Geology of the San Jacinto Quadrangle south of San Geronio Pass, California. Notes on Mining Activities in Inyo and Mono Counties in July, 1931-----   | .25    | .05                 |
| Chapters of Twenty-eighth Report of the State Mineralogist, 'Mining in California,' Walter W. Bradley. Published quarterly:   |        |                     |
| January, 1932, Economic Mineral Deposits of the San Jacinto quadrangle. Geology and Physical Properties of Building Stone from Carmel Valley. Contributions to the Study of Sediments. Sediments of Monterey Bay. Sanbornite-----   | .25    | .10                 |
| **April, 1932. Elementary Placer Mining Methods and Gold Saving Devices. The Pan, Rocker and Sluice Box. Prospecting for Vein Deposits. Bibliography of Placer Mining-----  | ----   | ----                |
| Abstract from April quarterly: Elementary Placer Mining Methods and Gold Saving Devices. Types of Deposits. Simple Equipment. Special Machines. Dry Washing. Black Sand Treatment. Marketing of Products. Placer Mining Areas. Laws. Prospecting for Quartz Veins. Bibliography (mimeographed)-----   | .20    | .05                 |
| July-October. (Ventura.) Report accompanying Geologic Map of Northern Sierra Nevada. Fossil Plants in Auriferous Gravels of the Sierra Nevada. Glacial and Associated Stream Deposits of the Sierra Nevada. Jurassic and Cretaceous Divisions in the Knoxville-Shasta Succession of California. Geology of a Part of the Panamint Range. Economic Report of a Part of the Panamint Range. Acquiring Mining Claims Through Tax Title. The Biennial Report of State Mineralogist----- | .50    | .15                 |
| Chapters of Report XXIX, 1933 (quarterly): titled "California Journal of Mines and Geology," containing the following:  |        |                     |
| January-April. Gold Deposits of the Redding and Weaverlyville Quadrangles. Geologic Formations of the Redding-Weaverlyville District, Northern California. Geology of Portions of Del Norte and Siskiyou Counties. Applications of  |        |                     |

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| Geology to Civil Engineering. The Lakes of California. Discovery of Piedmontite in the Sierra Nevada. Tracing 'Buried River' Channel Deposits by Geomagnetic Methods. Geologic Map of Redding-Weaverville District, showing gold mines and prospects. Geologic Map showing various mines and prospects of part of Del Norte and Siskiyou Counties...                  | \$0.80 | \$0.15              |
| July-October. Gold Resources of Kern County. Limestone Deposits of the San Francisco Region. Limestone Weathering and Plant Associations of the San Francisco Region. Booming. Death Valley National Monument, California. Placer Mining Districts, Senate Bill 480. Navigable Waters, Assembly Bill 1543   | .80    | .10                 |
| Chapters of Report XXX, 1934 (quarterly): titled "California Journal of Mines and Geology," containing the following:   |        |                     |
| January. Resurrection of Early Surfaces in the Sierra Nevada. Geology and Mineral Resources of Northeastern Madera County. Geology and Mineral Deposits of Laurel and Convict Basins, Southwestern Mono County. Notes on Sampling as Applied to Gold Quartz Deposits  | .40    | .10                 |
| April-July. Elementary Placer Mining in California and Notes on the Milling of Gold Ores  | .80    | .10                 |
| October. Current Mining Developments in Northern California. Current Mining Activity in Southern California. Geology and Mineral Resources of the Julian District, San Diego County. Geology and Mineral Resources of Elizabeth Lake Quadrangle. Dry Placers of Northern Mohave Desert. Biennial Report of State Mineralogist. Assessment Work Within Withdrawn Areas | .40    | .10                 |
| Subscription, \$1.50 in advance (by calendar year, only).   |        |                     |
| Chapters of State Oil and Gas Supervisor's Report:  |        |                     |
| Summary of Operations—California Oil Fields, July, 1918, to March, 1919 (one volume)  | Free   | ----                |
| Summary of Operations—California Oil Fields. Published monthly, beginning April, 1919:  |        |                     |
| **April, **May, **June, **July, **August, **September, **October, **November, **December, 1919  | ----   | ----                |
| **January, **February, **March, **April, **May, **June, **July, **August, **September, **October, **November, **December, 1920  | ----   | ----                |
| January, **February, **March, April, **May, **June, **July, August, **September, **October, **November, **December, 1921  | Free   | ----                |
| January, February, March, April, May, June, **July, **August, September, **October, **November, December, 1922  | Free   | ----                |
| January, February, **March, **April, May, **June, **July, August, September, **October, November, **December, 1923  | Free   | ----                |
| January, February, March, April, May, June, **July, August, September, October, November, December, 1924  | Free   | ----                |
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| January, February, March, April, May, June, July, August, September, October, November, December, 1926  | Free   | ----                |
| January, February, March, April, May, June, July, August, September, October, November, December, 1927  | Free   | ----                |
| January, February, March, April, **May, June, July, August, September, October, **November, **December, 1928  | Free   | ----                |
| January, February, March, April, May, June, July-August-September, October-November-December, 1929 (Published quarterly beginning July, 1929)   | Free   | ----                |
| January-February-March, April-May-June, July-August-September, October-November-December, 1930  | Free   | ----                |
| January-February-March, April-May-June, July-August-September, 1931   | Free   | ----                |
| January, February, March, April, May, June, July, August, September, October, November, December, 1932  | Free   | ----                |
| January, February, March, 1933  | Free   | ----                |
| April, May, June, 1933  | Free   | ----                |
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## BULLETINS

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| **Bulletin No. 1. A Description of Some Desiccated Human Remains, by Winslow Anderson. 1888. 41 pp., 6 illustrations   | ----  | ----                |
| **Bulletin No. 2. Methods of Mine Timbering, by W. H. Storms. 1894. 58 pp., 75 illustrations.  | ----  | ----                |
| **Bulletin No. 3. Gas and Petroleum Yielding Formations of Central Valley of California, by W. L. Watts. 1894, 100 pp., 13 illustrations, 4 maps.  | ----  | ----                |
| **Bulletin No. 4. Catalogue of Californian Fossils, by J. G. Cooper, 1894, 73 pp., 67 illustrations. (Part I was published in the Seventh Annual Report of the State Mineralogist, 1887)   | ----  | ----                |
| **Bulletin No. 5. The Cyanide Process, 1894, by Dr. A. Scheidel. 140 pp., 46 illustrations.  | ----  | ----                |
| **Bulletin No. 6. California Gold Mill Practices, 1895, by E. B. Preston, 85 pp., 46 illustrations.  | ----  | ----                |
| **Bulletin No. 7. Mineral Production of California, by Counties, for the year 1894, by Charles G. Yale. Tabulated sheet.   | ----  | ----                |
| **Bulletin No. 8. Mineral Production of California, by Counties, for the year 1895, by Charles G. Yale. Tabulated sheet.   | ----  | ----                |
| **Bulletin No. 9. Mine Drainage, Pumps, etc., by Hans C. Behr. 1896. 210 pp., 206 illustrations.   | ----  | ----                |
| **Bulletin No. 10. A bibliography Relating to the Geology, Paleontology and Mineral Resources of California, by Anthony W. Vogdes. 1896, 121 pp.   | ----  | ----                |
| **Bulletin No. 11. Oil and Gas Yielding Formations of Los Angeles, Ventura and Santa Barbara Counties, by W. L. Watts. 1897, 94 pp., 6 maps, 31 illustrations.   | ----  | ----                |
| **Bulletin No. 12. Mineral Production of California, by Counties, for 1896, by Charles G. Yale. Tabulated sheet.   | ----  | ----                |
| **Bulletin No. 13. Mineral Production of California, by Counties, for 1897, by Charles G. Yale. Tabulated sheet.   | ----  | ----                |
| **Bulletin No. 14. Mineral Production of California, by Counties, for 1898, by Charles G. Yale.  | ----  | ----                |
| **Bulletin No. 15. Map of Oil City Fields, Fresno County, by John H. Means, 1899.  | ----  | ----                |
| **Bulletin No. 16. The Genesis of Petroleum and Asphaltum in California, by A. S. Cooper. 1899, 39 pp., 29 illustrations   | ----  | ----                |
| **Bulletin No. 17. Mineral Production of California, by Counties, for 1899, by Charles G. Yale. Tabulated sheet.   | ----  | ----                |
| **Bulletin No. 18. Mother Lode Region of California, by W. H. Storms. 1900. 154 pp., 49 illustrations.   | ----  | ----                |
| **Bulletin No. 19. Oil and Gas Yielding Formations of California, by W. L. Watts. 1900, 236 pp., 60 illustrations, 8 maps.   | ----  | ----                |
| **Bulletin No. 20. Synopsis of General Report of State Mining Bureau, by W. L. Watts. 1901, 21 pp. This bulletin contains a brief statement of the progress of the mineral industry in California for the four years ending December, 1899 | ----  | ----                |
| **Bulletin No. 21. Mineral Production of California, by Counties, by Charles G. Yale. 1900. Tabulated sheet.   | ----  | ----                |
| **Bulletin No. 22. Mineral Production of California for Fourteen Years, by Charles G. Yale. 1900. Tabulated sheet.   | ----  | ----                |
| **Bulletin No. 23. The Copper Resources of California, by P. C. DuBois, F. M. Anderson, J. H. Tibbits and G. A. Tweedy. 1902, 282 pp., 69 illustrations, 9 maps.   | ----  | ----                |
| **Bulletin No. 24. The Saline Deposits of California, by G. E. Bailey. 1902, 216 pp., 99 illustrations, 5 maps.  | ----  | ----                |
| **Bulletin No. 25. Mineral Production of California, by Counties, for 1901, by Charles G. Yale. Tabulated sheet.   | ----  | ----                |
| **Bulletin No. 26. Mineral Production of California for the Past Fifteen Years, by Charles G. Yale. 1902. Tabulated sheet  | ----  | ----                |
| **Bulletin No. 27. The Quicksilver Resources of California, by William Forstner. 1903, 273 pp., 144 illustrations, 8 maps  | ----  | ----                |
| **Bulletin No. 28. Mineral Production of California for 1902, by Charles G. Yale. Tabulated sheet.   | ----  | ----                |
| **Bulletin No. 29. Mineral Production of California for Sixteen Years by Charles G. Yale. 1903. Tabulated sheet.   | ----  | ----                |

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| **Bulletin No. 30. Bibliography Relating to the Geology, Paleontology and Mineral Resources of California, by A. W. Vogdes. 1903, 290 pp.-----                                    | -----  | -----               |
| **Bulletin No. 31. Chemical Analyses of California Petroleum, by H. N. Cooper. 1904. Tabulated sheet.-----  | -----  | -----               |
| **Bulletin No. 32. Production and Use of Petroleum in California, by Paul W. Prutzman. 1904, 230 pp., 116 illustrations, 14 maps.-----  | -----  | -----               |
| **Bulletin No. 33. Mineral Production of California, by Counties, for 1903, by Charles G. Yale. Tabulated sheet.-----   | -----  | -----               |
| **Bulletin No. 34. Mineral Production of California for Seventeen Years, by Charles G. Yale. 1904. Tabulated sheet.-----  | -----  | -----               |
| **Bulletin No. 35. Mines and Minerals of California, by Charles G. Yale. 1904, 55 pp., 20 county maps. Relief map of California.-----   | -----  | -----               |
| **Bulletin No. 36. Gold Dredging in California, by J. E. Doolittle. 1905. 120 pp., 66 illustrations, 3 maps.-----   | -----  | -----               |
| **Bulletin No. 37. Gems, Jewelers' Materials, and Ornamental Stones of California, by George F. Kunz. 1905, 168 pp., 54 illustrations.-----                                       | -----  | -----               |
| **Bulletin No. 38. Structural and Industrial Materials of California, by Wm. Forstner, T. C. Hopkins, C. Naramore and L. H. Eddy. 1906, 412 pp., 150 illustrations, 1 map.-----   | -----  | -----               |
| **Bulletin No. 39. Mineral Production of California, by Counties, for 1904, by Charles G. Yale. Tabulated sheet.-----   | -----  | -----               |
| **Bulletin No. 40. Mineral Production of California for Eighteen Years, by Charles G. Yale. 1905. Tabulated sheet.-----   | -----  | -----               |
| **Bulletin No. 41. Mines and Minerals of California for 1904, by Charles G. Yale. 1905, 54 pp., 20 county maps.-----  | -----  | -----               |
| **Bulletin No. 42. Mineral Production of California, by Counties, 1905, by Charles G. Yale. Tabulated sheet.-----   | -----  | -----               |
| **Bulletin No. 43. Mineral Production of California for Nineteen Years, by Charles G. Yale. Tabulated sheet.-----   | -----  | -----               |
| **Bulletin No. 44. California Mines and Minerals for 1905, by Charles G. Yale. 1907, 31 pp., 20 county maps.-----   | -----  | -----               |
| **Bulletin No. 45. Atriferous Black Sands of California, by J. A. Edman. 1907. 10 pp.-----  | -----  | -----               |
| **Bulletin No. 46. General Index of Publications of the California State Mining Bureau, by Charles G. Yale. 1907, 54 pp.-----   | -----  | -----               |
| **Bulletin No. 47. Mineral Production of California, by Counties, 1906, by Charles G. Yale. Tabulated sheet.-----   | -----  | -----               |
| **Bulletin No. 48. Mineral Production of California for Twenty Years, by Charles G. Yale. 1906.-----  | -----  | -----               |
| **Bulletin No. 49. Mines and Minerals of California for 1906, by Charles G. Yale. 34 pp.-----   | -----  | -----               |
| Bulletin No. 50. The Copper Resources of California, 1908, by A. Hausmann, J. Kruttschnitt, Jr., W. E. Thorne and J. A. Edman. 366 pp., 74 illustrations. (Revised edition).----- | \$1.00 | \$0.25              |
| **Bulletin No. 51. Mineral Production of California, by Counties, 1907, by D. H. Walker. Tabulated sheet.-----  | -----  | -----               |
| **Bulletin No. 52. Mineral Production of California for Twenty-one Years, by D. H. Walker. 1907. Tabulated sheet.-----  | -----  | -----               |
| **Bulletin No. 53. Mineral Production of California for 1907, with County Maps, by D. H. Walker. 62 pp.-----  | -----  | -----               |
| **Bulletin No. 54. Mineral Production of California, by Counties, by D. H. Walker, 1908. Tabulated sheet.-----  | -----  | -----               |
| **Bulletin No. 55. Mineral Production of California for Twenty-two Years, by D. H. Walker, 1908. Tabulated sheet.-----  | -----  | -----               |
| **Bulletin No. 56. Mineral Production for 1908, with County Maps and Mining Laws of California, by D. H. Walker, 78 pp.-----  | -----  | -----               |
| **Bulletin No. 57. Gold Dredging in California, by W. B. Winston and Charles Janin. 1910, 312 pp., 239 illustrations, 10 maps.-----   | -----  | -----               |
| **Bulletin No. 58. Mineral Production of California, by Counties, by D. H. Walker. 1909. Tabulated sheet.-----  | -----  | -----               |

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| **Bulletin No. 59. Mineral Production of California for Twenty-three Years, by D. H. Walker. 1909. Tabulated sheet----  | ----   | ----                |
| **Bulletin No. 60. Mineral Production for 1909, with County Maps and Mining Laws of California, by D. H. Walker. 94 pp.-----  | ----   | ----                |
| **Bulletin No. 61. Mineral Production of California, by Counties, for 1910, by D. H. Walker. Tabulated sheet----  | ----   | ----                |
| **Bulletin No. 62. Mineral Production of California for Twenty-four Years, by D. H. Walker. 1910. Tabulated sheet----   | ----   | ----                |
| **Bulletin No. 63. Petroleum in Southern California, by P. W. Prutzman. 1912, 430 pp., 41 illustrations, 6 maps-----  | ----   | ----                |
| Bulletin No. 64. Mineral Production for 1911, by E. S. Boalich. 49 pp.-----   | Free   | \$0.05              |
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| Bulletin. Reconnaissance of the Colorado Desert Mining District. By Stephen Bowers, 1901. 19 pp. 2 illustrations. Paper-----   | .10  | ----            |
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| **Map of El Dorado County, Showing Boundaries, National Forests -----   | -----  | -----  |
| **Map of Madera County, Showing Boundaries, National Forests -----  | -----  | -----  |
| **Map of Placer County, Showing Boundaries, National Forests -----  | -----  | -----  |
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| Geological Map of Inyo County. Scale 1 inch equals 4 miles -----  | .60    | .05    |
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### DETERMINATION OF MINERAL SAMPLES

---

Samples (limited to one at one time) of any mineral found in the State may be sent to the Division of Mines for identification, and the same will be classified free of charge. No samples will be determined if received from points outside the State. It must be understood that no assays, or quantitative determinations will be made. Samples should be in lump form if possible, and marked plainly with name of sender on outside of package, etc. No samples will be received unless delivery charges are prepaid. A letter should accompany sample, giving locality where mineral was found and the nature of the information desired.



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